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OF THE

Literary and Historical Society

OF QUEBEC.

SESSION OF 1870-71.

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TRANSACTIONS

OF THE

Literary and Historical Society of Quebec.

SESSION OF 1870-71.

Paper I.—OPENING ADDRESS—"REVIEW OF THE PAST YEAR: MOVING ACCIDENTS BY FLOOD AND FIELD."

By Dr. W. J. ANDERSON, President.

(Read before the Society, Nov. 16th, 1870.)

About two hundred years ago—in the beginning of January, 1666—those of our forefathers who inhabited the city of London, took breath between the shocks of two fearful calamities: one not quite past, though its fury had abated; the other to come.

The plague had appeared at the close of 1664, and, though no new visitor, smote in the course of the following year the people of England, and especially of her capital, with a violence unknown before. Defoe, in the "*History of the Plague Year*," shews death, with every accompaniment of pain and terror, stalking through the narrow streets of old London, and changing their busy hum into a silence broken only by the wailing of the mourners of fifty thousand dead; by the woful denunciations and mad prayers of fanatics, and by the madder yells of despairing profligates.

But about the period first-mentioned, the death-rate had sunk to nearly its ordinary amount; a case of plague occurred only here and there, and the richer citizens had returned to their dwellings. The remnant of the people began to toil in the accustomed round of duty, or of pleasure; and the stream of city life bid fair to flow back along its old bed, with renewed and uninterrupted vigour.

The newly-kindled hope was deceitful. The great plague returned, indeed, no more; but what it had done for Londoners, the great fire, which broke out in the autumn of 1666, did for London; and in September of that year, a heap of ashes and the indestructible energies of the people were all that remained of the glory of five-sixths of the city within the walls.

Our forefathers had their own ways of accounting for each of these calamities. They submitted to the plague in humility and in penitence, for they believed it to be the judgment of God. But towards the fire they were furiously indignant, interpreting it as the effect of the malice of man—as the work of the Republicans, or of the Papists, according as their prepossessions ran in favor of loyalty or of Puritanism: all their hypotheses were alike wrong; the plague was no more, in their sense, Divine judgment than the fire was the work of any religious sect; but they were themselves the authors of both plague and fire, and it rested with themselves to prevent the recurrence of calamities to all appearance so peculiarly beyond the reach of human control—so evidently the result of the wrath of God, or of the craft and subtlety of an enemy.

One may picture to oneself how harmoniously the holy cursing of the Puritan of that day would have chimed in with the unholy cursing and the crackling wit of the Rochesters and Sedleys, and with the revilings of the political fanatics, if any plain-dealer had gone on to say that if the return of such misfortunes were ever to be rendered impossible, it would not be in virtue of the victory of the faith of Laud or of that of Milton, and as little by the triumph of republicanism as by that of monarchy; but that the one thing needful for compassing this end, was, that the people of England should second the efforts of an insignificant corporation, the establishment of which, a few years before the epoch of the great plague and the great fire, had been as little noticed as *they* were conspicuous. But so it was: half a dozen young men, studious of the "New Philosophy," who met in each other's lodgings in Oxford or in London, in the middle of the seventeenth century, became the founders of the "Royal Society for the Improvement of Natural Science," a society which has ever since exercised so powerful an influence in originating and advancing everything calculated to promote the intellectual, moral, and material interests of humanity. Through that and similar associations we have learned that pestilences will only take up their abode among those who have prepared and kept unswept and ungarnished residences for them. Their cities must have narrow, unwatered streets, foul with accumulated garbage. Their houses must be ill-drained, ill-lighted, ill-ventilated. Their subjects must be ill-washed, ill-fed, ill-clothed. We now have learned somewhat of nature, and partly obey her. Because of this partial improvement of our natural knowledge, and of that fractional obedience, we have no plague; because that knowledge is still imperfect, and that obedience still incomplete, typhus is our companion and cholera our visitor. But it is not presumptuous to express the opinion that when our knowledge and obedience are complete, cholera and typhus shall disappear as the plague has.

From this cause we know, also, that though London contains tenfold the inflammable matter that it did in 1666; though its rooms are filled with wood-work and light draperies; though inflammable and explosive gases are in every street and every house, yet, so admirable are the engines furnished by the improvement of Natural Science, a street is scarcely ever burnt down; and where fire does occasionally afflict severe damage, the progress of natural knowledge in mathematics, and the accumulation of wealth in virtue of other natural knowledge, have been such, that the loss is generally compensated by societies.

In connexion with the *material* advancement from the increase of natural knowledge, it may be asked, "What of the inner life of the people?" and many, it is to be feared, would answer, it is neither purer nor more fervent in religious faith than the generation which produced a Boyle, an Evelyn, a Milton. The mud of society may be found at the bottom instead of at the top, but the sum-total is as deserving of swift judgment as at the time of the restoration; and there is no reason to believe that it is the improvement of faith or morals which keeps the plague from our cities, but that it is the improvement of our natural knowledge. This many might probably say; but I will venture to assert, that whatever direction the improvement of natural knowledge has taken,—however low the aims of those who have commenced it—it has not only conferred practical benefits on men, but, in so doing, has effected a revolution in their conception of the universe and of themselves, and has profoundly altered their modes of thinking and their views of right and wrong. These opinions I have long entertained; but I have lately found them so lucidly expressed by *Huxley*, in his lay sermon on the "Advisableness of Improving Natural Knowledge," that I have submitted them to you very nearly in the language which he has used, and I shall conclude this paragraph with his very words, which I most fully endorse:—"I say that natural knowledge, seeking to satisfy natural wants, has found the ideas which can alone still spiritual cravings. I say that natural knowledge, in desiring to ascertain the laws of comfort, has been driven to discover those of conduct, and to lay the foundation of a new morality."

What the new morality is, has been admirably pointed out by Lord Macaulay, in his review of the life and writings of Lord Bacon. He there shews that whilst the old philosophy disdained to be useful, and was content to be stationary, two words form the keystone of the new—Utility and Progress. He illustrates this by reference to the philosophy of the heathen Seneca and the Christian Bacon.

"Philosophy," says Seneca, "teaches us to be independent of all material substances, of all mechanical contrivances. The wise man lives according to nature. Instead of attempting to add to the physical comforts of his species, he regrets that his lot was not cast in that golden age, when the human race had no protection against the cold but the skins of wild beasts, no screen from the sun but a cavern." Bacon, on the other hand, assumed that the well-being of the human race was the end of knowledge. To make men perfect he did not aim at; but his study was to make imperfect men comfortable. "The beneficence of his philosophy resembled the beneficence of the common Father, whose sun rises on the evil and the good, whose rain descendeth for the just and the unjust." Plato thought man was made for philosophy: in Bacon's opinion, philosophy was made for man; nothing was too high or too low for its scope, that would tend to increase the comfort and mitigate the pains of mortals. Bacon's philosophy was built on a rock, being based on the beneficent spirit of Christianity, which in our day has moved philanthropy to shew itself in founding hospitals for the relief of the aged, the infirm, the sick and distressed; in establishing institutions for the deaf, dumb and blind, so that still, actuated by pure religion, and enlightened by natural knowledge,—that is to say, by a knowledge of the natural laws—humanity is able to make the deaf hear, the lame walk, the blind see, and the poor have the gospel thus practically preached to them.

I have had an object in making these remarks in connexion with the Royal Society, because I wish to institute a comparison between it and our own comparatively insignificant and unknown association; and it is my intention to do it in such a way that I trust I will escape the charge of presumption. "*Magna componere parvis*" is quite legitimate, when it is freely admitted at the outset that "one star exceedeth another in brightness." Admitting, then, that the Royal Society is as the sun in the firmament of science, and that ours is but a star of the lowest magnitude, I am prepared to shew, and I wish to shew, that in its smaller sphere it has diffused its due proportion of light, and that it is still capable of giving the light and warmth which its founders intended it should impart.

If you look at the objects which the Royal Society had in view, and turn to our charter, you will find that they are very much alike; and further, if you examine the "Transactions" of both, the subjects treated are similar, and are such as, to use the language of the great Utilitarian philosopher Bacon, tend to "the multiplying of human enjoyments, and the mitigating of human sufferings;"—"to endow human life with new inventions and powers."

When you read in the first volume of our "Transactions" the papers by Wilkie, Sewell, Sheppard, Hall, Fletcher, Savage, Baddeley, Cochrane, Noble, and others, you may not say, "in those days there were giants in the land," like unto the giants of the Royal Society; but you are impressed with the idea that you are in communication with men of earnest, vigorous and acute intellect, who had very much at heart the furtherance of the good work in which they were engaged; and if we look at the more recent labourers in the field, we will certainly find nothing of which to be ashamed.

I shall now proceed to take a glance at some of the principal events of the past eventful year, and see if our Society has exercised any influence upon them, or if from their study we can add to our experience.

THE RED RIVER INSURRECTION.

The first to which I shall allude is the unexpected and unfortunate insurrection at Red River, which gave rise to several "untoward events" which we must all deplore. The constitution of our Society wisely prevents us from discussing matters political or religious, and I only introduce it for the simple purpose of recording an historical fact and a circumstance connected with moral training and management, well worthy of note in our "Transactions." Colonel Wolseley, who directed all the movements of the mixed force of regulars and Canadian volunteers comprising the expedition which the joint wisdom of the Imperial and Dominion Governments deemed it prudent to send to Fort Garry, has used this language : "I have campaigned in many parts of the world, but I never saw men before go through such incessant labour. For days together the men were wet through. They had at times to work up to their waists in water; and during the months of July and August, fine weather was the exception, and rain was the rule. Great as was their labour, and trying as was this exposure, I never heard a murmur from any one. Officers vied with the men in carrying heavy loads, and the praiseworthy rivalry between the regular troops and the militia, in their eagerness to get forward, enabled me to reach our destination earlier than I had at one time anticipated. *My temperance friends will learn with pleasure that this was one of the few military expeditions ever undertaken where spirits formed no part of the daily ration. There was a large allowance of tea instead; and notwithstanding the melancholy forebodings of some medical officers, the result was a complete success. There was a total absence of sickness and crime.*"

The names of two members of this Society, Mr. A. R. Roche, late of the Crown Lands Department, and Mr. Simon Dawson, of Three Rivers, Civil Engineer, are identified with the Nor-West ; Mr. Roche having directed public attention to it, and having appeared before a committee of the Imperial Parliament upwards of twelve years ago ; and Mr. Dawson having been the engineer of the road, the greater part of which was traversed by the military expedition, and which, notwithstanding all that has been said to its disparagement, has since been acknowledged by competent judges to have been as good as any new road possibly could be, subjected as it was to the transport over it of very heavy loads, in most unfavorable weather.

THE FENIAN INVASION.

The cry of "wolf! wolf!" had been raised so often in the early part of the season, that when the telegraph brought us the news on Tuesday, 24th May, that the Fenians had actually crossed the border at several points in the Province of Quebec, it was hardly credited; and the citizens of Quebec only began to realize the fact when they learned that the 69th Regiment had actually started by rail during the following night for the scene of action. Very conflicting reports were in circulation, and much doubt and anxiety existed, till all fears were removed by the communication, by the lady who had received it, of the following telegram:

> "HINCHINBROOK, Friday, 27th, 3.55 P.M.—Engaged the enemy this morning. Drove them back with great loss—only escaping annihilation by seeking protection across the frontier. They lost arms and accoutrements, &c. All in good spirits."

This telegram proved to be substantially correct; and when it was subsequently ascertained that though the Rifle Brigade, under the orders of Lord Alexander Russell, with Prince Arthur on his staff, had also hastened to the frontier, to the expected post of honor and danger, yet that our own volunteers had gallantly routed the invaders, Colonels Bagot and Lord Alexander Russell having wisely given them the right of attack, while closely supporting them, a justifiable pride was excited in all our breasts, which was manifested especially by the enthusiastic reception given to the 69th on their return on the morning of the 31st, after the complete collapse of the attempted invasion. Thus happily terminated their brief campaign of six days, which was appropriately closed by the following order from General Lindsay:

"Head-Quarters,
"Montreal, *4th June*, 1870.

"*General Orders, No.* 1.

"Canada has been once more invaded by a body of Fenians who are citizens of the United States, and who have taken advantage of the institutions of that country to move without disguise large numbers of men and warlike stores to the Missisquoi and Huntingdon frontiers, for the purpose of levying war on a peaceful community.

"From both these points the invading forces have been instantly driven with loss and in confusion, throwing away their arms, ammunition, and clothing, and seeking shelter within the United States.

"Acting with a scrupulous regard to the inviolability of a neighbouring territory, the troops were ordered to halt, even though in pursuit, upon the border.

"The result of the whole affair is mainly due to the promptitude with which the militia responded to the call of arms, and to the rapidity with which their movements to the front were carried out, and the self-reliance and steadiness shewn by this force as well as by the armed inhabitants on the frontier.

"The regular troops were kept in support, except on the Huntingdon frontier, where one company took part in the skirmish.

"The proclamation of the President and the arrival of the Federal troops at St. Albans and Malone, were too late to prevent the collection and transport of warlike stores, or an inroad into Canada.

"The reproach of invaded British territory and the dread of insult and robbery have thus been removed by a handful of Canadians; and the Lieutenant-General does not doubt that such services will receive the recognition of the Imperial Government.

"The Lieutenant-General congratulates the militia upon this exhibition of their promptness, discipline, and training; and in dismissing the men to their homes, he bids them carry with them the assurance that their manly spirit is a guarantee for the defence of Canada.

"By order, "J. E. Thackwell, D.A.G."

In connection with this subject of the defence of the Dominion, it may be mentioned that on the 1st of April, 1864, one of our Vice-Presidents, Mr. Edmund A. Meredith, read a paper, since published in our *Transactions*, "*On Short School Time, with Military or Naval Drill, in connection especially with the subject of an efficient Militia System.*" The sentiments there expressed, and which originated in Mr. Chadwick's communication on the same subject to Mr. Senior, are well worthy, at the present time, of the earnest attention of those in authority in our Militia Department.

PRINCE ARTHUR.

Our record would be incomplete were I to omit special mention of Prince Arthur's sojourn among us, during the greater part of the past year. It will not be necessary for me to tell

> "How he looked when he danced,
> When he sat at his ease,
> When his Highness had sneezed,
> Or was going to sneeze ;"

but I may say that his whole visit passed without a single *contre-temps;* that whether in his intercourse with those in authority, his communications with learned bodies, his meetings with our people in public balls, or in his relations in society of a more private character, he at all times shewed himself an amiable, courteous and sensible prince. There can be no doubt that this clear record, though mainly owing to his own excellent disposition, was largely brought about by the wise and prudent counsels of his governor, Colonel Elphinstone. His first reception by the colonists was favorable to him, not merely as the son of our Queen, but as "the son of his mother," respected on account of her womanly virtues; but the feeling of good-will deepened the longer he remained with us; and there can be no doubt that when he gave expression of *affectionate farewell* on the ordnance wharf, before embarking for England, the sentiment was echoed through the length and breadth of our land.

Prince Arthur's presence in Quebec gave occasion to one of the most imposing and pleasing ceremonies ever witnessed here: I mean the presentation of colors to the 69th Regiment, and to the depositing the old ones, the following day, in the Protestant cathedral. It has been generally thought that the latter ceremony would have been complete without any make-believe child's-play; and some have profanely said that they were reminded by that portion of it of the negro song:

> "Who's dat knockin' at de door?
> Is dat you, Sambo? No; 'tis Jim!
> You're not good-lookin',
> So you can't come in!
> Dere's no use knockin' at de door any more;
> Dere's no use knockin'!"

But, nevertheless, all who witnessed these ceremonies will look back with pleasure in connecting them with Prince Arthur, Colonel Bagot, and the officers and men of the 69th Regiment.

THE PRINCESS LOUISE.

The announcement of the intended marriage of the Princess Louise, fourth daughter of the Queen, with the Marquis of Lorne, eldest son and heir of the Duke of Argyle, has taken the nation by surprise, but at the same time has caused a very general feeling of satisfaction. The feeling of surprise was produced by the unexpected departure of Her Majesty from that policy which she has hitherto pursued in reference to the Royal Marriage Act, to which it may be interesting to make a short reference here.

In 1771, the Duke of Cumberland, one of the brothers of George the Third, had privately married the widow of Christopher Horton, Esq., of the County of Derby. When it was publicly announced, the King forbade them the Court. On the following year, another brother, the Duke of

Gloucester, acknowledged that he had been married to the Countess of Waldegrave since 1766. King George was highly incensed, and at once sent a message to Parliament, which, after much opposition, led to the passage of a bill which declared that none of the Royal family, under the age of twenty-five, should marry without the King's consent; but that on attaining that age, they were at liberty, in case of refusal, to apply to the Privy Council by announcing the name of the person they were desirous of espousing; and if within a year neither house should address the King against it, the marriage might be legally solemnized; but all persons assisting at or knowing of an intention in any of the Royal family to marry without complying with the Act, and who did not disclose it, should incur the penalties of a *premunire.* The bill was always distasteful to a very large portion of the British people, but it was carried by the great power of the Court. May, in his "Constitutional History," has written:—"The arbitrary character of the bill was conspicuous. It might be reasonable to prescribe certain rules for the marriage of the Royal family,—as that they should not marry a subject, a Roman Catholic, or the member of any Royal house at war with the country, without the consent of the King; but to prescribe no rule at all, but the absolute will of the King himself, was a violation of all sound principles of legislation. Again, to extend the minority of the Princes and Princesses to twenty-five, created a harsh exception to the general law in regard to marriages."

Among the numerous squibs of the day, the following is given as a fair sample. A Prince may ascend the throne at eighteen, and the reason why is thus given:

"Quoth Dick to Tom: Thou art a fool,
And little knowest of life;
Alas! 'tis easier far to rule
A kingdom than a wife."

It is painful to look at the consequences of this bill, in connexion with the children of its author. With one or two exceptions, the careers of his sons were marked by profligacy and libertinism ; and in the fate of his sisters and daughters we find little more encouraging. It is true, the lives of none of them were defiled by immoralities, such as brought merited obloquy on their brothers ; but blighted affections and broken health embittered the lives of some, while *state* marriages, or enforced celibacy, had an equally sinister effect on others. Who can doubt that these touching lines, written by the Princess Amelia, shortly before her death, came from the heart ?

" Unthinking, idle, wild and young,
I laughed, I danced, I talked, I sung,
And, proud of health, of freedom vain,
Dreamed not of sorrow, care or pain,
Concluding, in these hours of glee,
That all the world was made for me ;
But when the hour of trial came—
When sickness shook this trembling frame—
When folly's gay pursuits were o'er,
And I could dance and sing no more,
It then occurred how sad 'twould be
Were this world *only* made for me."

Having alluded to the dire effect of the law on the children, let us look back to the Duke of Gloucester, and mark the effect of his marriage on him. On referring to the *Annals of George III.*, we find this notice :—"On the 25th August, 1805, died the Duke of Gloucester, brother to the King, a prince much respected for his public and private virtues, and who had not sustained the slightest degradation in the view of the English nation, by his marriage with an English lady, or by giving his son an English in preference to a German education."

The Queen has secured the sympathy of her people by the wise course she has pursued in the education of her children, which has made them truly English ladies and gentlemen. The present step shews that while she has consulted the feelings and affections of her child, she has kept pace with, if not placed herself in advance of the opinions of her people, indicated, I believe, by universal approval.

In connection with this subject, I may quote a verse from Burns' *Dream*, written in 1796:

> "Ye, lastly, bonnie blossoms, a',
> Ye Royal lasses dainty;
> Heaven mak you guid as well as braw,
> And gie ye lads a' plenty;
> But sneer na British boys awa',
> For Kings are unco scant, ay,
> And German gentles are but sma';
> They're better, just, than want, aye,
> On onie day."

I cannot refrain from giving also an extract from "Our Life in the Highlands," by the Queen:

> "Our reception (at Inverary) was in the true Highland fashion. The pipers walked before the carriage, and the Highlanders on either side, as we approached the house. Outside stood the Marquis of Lorne, just two years old, a dear, white, fat, fair little fellow, with reddish hair, but very delicate features, like both his father and mother; he is such a merry, independent little child. He had a black velvet dress and jacket, with a "sporan," scarf, and Highland bonnet."

It will not be inapropos to cite *Mr. Punch* among the prophets:

> "*3rd February*, 1849.—*Picture of England in* 1869.—We have heard it stated that the august mother and father of a numerous and illustrious race, whose increase is dear to the heart of every Briton, have determined no longer to seek for German alliances for their exalted children, but to look at home for establishments for those so dear to them. More would be at present premature. We are not at liberty to mention particulars; but it is whispered that H. R. Highness the Princess Boadicea is about to confer her Royal hand upon a young nobleman, who is the eldest son of a noble peer, who is connected by marriage with our noble and venerable Premier, with the Foreign and Colonial Secretaries, and with his Grace the Archbishop of Canterbury."

The most remarkable feature in this statement, which is about to be almost literally realized in the marriage of the Princess Louise with the Marquis of Lorne, is, that it was intended to convey the idea of what Thackeray, the writer, considered ought to be, but what he thought was very improbable; but, strange to say, two other circumstances alluded to in the same article, and in the same spirit, have also come to pass. Among the names of persons given in the *Gazette* of the period as having attended a banquet in high life, are those of "Lord and Lady Disraeli, the Countess of Stockport, and the Ladies Cobden."

It is true, Mr. Disraeli declined a peerage for himself, but accepted it for his wife; and though Mr. Cobden, who filled so large a space in the eye of the world, has died before his time, his colleague, Mr. Bright, if he has not accepted a peerage, may be now seen, if not actually at Court, in a Court dress in the columns of *Punch*, and is now the Right Honorable John Bright.

I trust we may congratulate ourselves on the belief that this step, taken by the Queen, is the virtual abrogation of an unnatural, if not immoral law—a law which never commended itself to the mass of the British people, and which was only defended by the Court on the ground of expediency, and the necessity for which has happily been found no longer to exist.

THE ECLIPSE OF AUGUST 7TH, 1869.

The total eclipse of the sun of August 7th, in 1869, attracted very general attention, and several expeditions were sent out by various governments to observe and report on it. It so happened, that, through the instrumentality of our senior Vice-President, Commander Ashe, the superintendent of the Observatory here, the Dominion Government was induced to send a party under his control to Jefferson Clty, in the far west. Commander Ashe selected as his consorts our then

President, the Revd. James Douglas, and Mr. Falconer, of Bath, England; and on his arrival at Jefferson, he had the good fortune to be joined by Mr. Vail, of Philadelphia, and Mr. Stanton. Captain Ashe reports: "By Friday night all preparations were made, and we retired to rest with great doubts about having a fine day. However, Saturday came at last, and the morning was hazy and overcast; but about eight the clouds began to break, and Mr. Vail and I took observations for 'time.' The afternoon was cloudless; but still a haze near the horizon. At half-past three, we 'beat to quarters.' Mr. Douglas shut himself up in the dark room; I took charge of the telescope; Mr. Stanton, with a light cloth, covered and uncovered the 'object-glass;' Mr. Vail had his telescope nicely adjusted; and Mr. Falconer was seated in a very good position to observe the dark shadow crossing the country, and to note any other phenomenon. At 3h. 38m. 40s., local mean time, the first contact took place, and the first photogram taken, shewing a slight indentation on the sun's limb. We took the partial eclipse with an eye-piece, giving a three-inch picture; but as it was hazy, I removed it before totality, and took the photograms in the principal focus."

You will observe that the eclipse occurred in 1869; consequently, it cannot be recorded as an event of 1870; but as our Vice-President was the astronomer, and our then President the photographer of the expedition; and as their papers on the subject, which enrich this year's Transactions, were read to the Society in the session of the present year; and further, as Captain Ashe's report has given rise to a controversy still undecided, I think I can introduce it to your notice quite legitimately; and I have great pleasure in directing attention to Mr. Douglas's paper on "Recent Spectroscopic Observations of the Sun, and the Total Eclipse of August 7th, 1869," which will be found to contain the most valuable information on the subject down to the present time; and to Captain Ashe's paper, entitled "The Canadian

Eclipse Party, 1869," which a distinguished American astronomer has styled "A draught of sparkling Astronomy," and which goes

"From grave to gay; from lively to severe."

I shall only further say, here, that Mr. De la Rue, the Astronomer Royal, and some American astronomers, have taken exception to Commander Ashe's photograms, alleging that their most interesting feature arose from movement of the telescope. Captain Ashe still holds, with some reason, to the reliability of his photogram, and is able to give mathematical proofs for his belief, and has certainly got his opponents on the hip,—one having clearly pointed out that the telescope must certainly have moved to the *right;* while an equally high authority, who supports him, avers that it undoubtedly moved to the *left*—which involves an awkward contradiction.

The Royal Society commenced observations on the spots of the sun two hundred years ago; and since then a host of eminent men have successively given their views, including among the more recent observers in England the younger Herschel, De la Rue, Lockyer, and a host of others; on the continent, Frauenhofer, Jaunsen, Vogel; Professor Young, of Hanover, in the United States; and in Canada, our own Vice-President, Commander Ashe; and though they have done much, by the aid of the spectroscope, to shew what is the physical constitution of the sun, still it appears to me that as yet the darkness is rendered more visible.

The most noteworthy feature in the records of this, as of former eclipses, is the very wide range of differences in the estimates of the various phenomena. Thus, in the eclipse of 1842, M. Petit, at Montpelier, estimated the width of the corona at barely one-fourth of the moon's diameter; while Baily, who then first observed with attention the phenomenon since known as "Baily's beads," considered the corona about twice as wide. To Struve, the Prussian astronomer, the corona appeared still wider. "It is interesting," says a writer in the "Cornhill," "to notice these discrepancies between the observations of modern astronomers of repute for accuracy and observing skill. It shews that the differences recorded in the aspect of the corona are not due to such errors as unpractised observers might be expected to make."

Whatever may be the extent of the corona—whatever may give rise to it, "it is a fitting crown of glory for that orb, which sways the planets by its attraction, warms them by its fires, and pours forth on all of them *the electric and chemic influences which are as necessary as light and heat for the welfare of their inhabitants.*"

We all have heard of the *odium theologicum*, and the great affection which the members of the medical profession bear to each other: we are told that hawks (that is to say, lawyers) will not pick out hawks' een; but when I read of the extraordinary things which some of these *celestials* allege they have seen, and the cool way in which their brother astronomers give them direct contradiction, I am lost, not "in wonder, love and praise," but in wonder and a *maze*. I am comforted, however, with the knowledge that I do not stand alone, for here is what another has written:

"*A Comfortable Prospect.*—The spots on the sun have given rise to much controversy among scientific men. Some hold the theory that the heat of the sun is maintained by the falling-in of planets, as lumps of coal are supplied to a furnace, and that the spots on the sun's surface are the furnace-doors open to receive the fuel, meteorites being pieces of slag thrown off, which become reduced to very small portions by the long journey they have to make. But some carry this a good deal further, and believe that a distillation of matter is to take place, and that the whole of the systems of worlds are to be reduced to ashes, and to be redistilled into a gaseous form, preparatory to a new creation taking place. The exact date of this event has not been given, but it is made out on purely philosophical principles. It appears to be something like the three wonderful Bedouin brothers: one jumped down the other's throat; the second jumped down the throat of the third; and he, with superhuman exertion, jumped down his own throat, and disappeared from society. "Retardation," in the case of the heavenly bodies, is to do it all. Nothing can be simpler. By the process of "retardation" in space, all the planets must fall into the sun; the suns in their turn are to fall into each other, "each time" (how wonderfully accurate is science) "augmenting their heat-giving power as their *mutual* masses increase." There is something a little hazy about the word mutual, as so applied; but as the subject itself is a little hazy, it may pass. The result is what the unfortunate dwellers on the planets have to look to, and that is, as we have stated, that "ultimately"—how long is not stated, and Time is the great consoler—there is to be nothing in the world but gas. There is so much of it just now evolved in the public utterances of our great men, that really the theory does not seem to be so improbable as might be thought."

Addison makes Cato say:

"The stars shall fade away, the sun himself
Grow dim with age, and nature sink in years."

And another poet tells us:

"The sun is but a spark of fire,
A transient meteor in the sky."

Shakespeare also says:

"The cloud-capt towers, the gorgeous palaces—
Yea, the great globe itself, and all that it inheriteth—
Shall dissolve, and, like the baseless fabric of a vision,
Leave not a wreck behind."

Our religion teaches us, likewise, that this earth shall be destroyed by some mighty catastrophe—not by any slow process, however, but in the "twinkling of an eye."

I do not believe that the sun wastes his strength, and that he would become completely exhausted unless he were renovated by meteors and comets. I believe that, as in electricity and magnetism, where there is a double action continually going on, the same ray of the sun which sends his heat to us also returns it to him; consequently, there is no waste. Byron, in his apostrophe to the Ocean, says:

"Dark-heaving, boundless, endless, and sublime—
The image of Eternity—the throne
Of the Invisible.

"Unchangeable, save to thy wild waves play;
Time writes no wrinkle on thy azure brow;
Such as creation's dawn beheld, thou rollest now."

What the "Great First Cause" is in general creation, I believe the sun is, in his own system, and that we may in truth apostrophise him in the words of Byron:

"Such as creation's dawn beheld, thou rollest now."

Something more than barren theory is likely, however, to arise from the observations with the spectroscope into the physical constitution of the sun, if the following can be relied upon:

"*Use of Metals as Fuel.*—An English inventor proposes to substitute metals for coal as fuel for ocean steamers, and has taken out a patent for a method of carrying out his views, his object being to obtain a larger amount of steam from a given quantity of fuel. When coal is burnt, the solid coal is turned into gas; a large portion of heat becomes latent, and is wasted by volatilizing the solid. The oxygen of the atmosphere is a gas by reason of the large amount of heat combined with it. When zinc, iron, or manganese is burned, the resulting oxide is a dense solid; little or no heat is wasted, as it is not turned into vapour. In addition to this, the inventor obtains the cosmical heat latent in the oxygen of the atmosphere; and the result is, that one pound of zinc will evaporate more than four times as much water as one pound of coal, the advantage of which, on long sea voyages, is obvious. The zinc or other metal thus becomes a vehicle of power, much larger than can be obtained from the same weight or bulk of coal; and the oxide of the metal may subsequently be reduced at any convenient place where coal is accessible. The following is the manner in which it is proposed to carry out this invention:—The furnace of the boiler is divided into two or more parts: first, the hearth, or grate, on which the metal is burned (in this description we will confine ourselves to the metal zinc); secondly, a chamber behind the hearth to collect the oxide. In the case of tubular boilers, the heated gas from this chamber is made to circulate through the tubes. The furnace has the bottom and sides, and sometimes the top also, of brick, fire-clay, or any other refractory substance. The air is admitted over the combustible metal, or a blast through the same; in the latter case pipes are built in the bottom or sides of the furnace.

"Whether this method will prove practically successful or not, it is certainly based on sound principles. Every one knows what a small proportion of coal, compared to the iron, is used in the furnaces of iron foundries, and how the partial combustion of the iron itself increases the heat derived from coal. If stoves could be built that would burn iron, it would doubtless be as cheap a fuel as coal, perhaps cheaper."

THE ŒCUMENICAL COUNCIL.

"There is not, and there never was, on this earth, a work of human policy so well deserving of examination as the Roman Catholic Church. The history of that church joins together the two great ages of human civilization. No other institution is left standing which carries the mind back to the times when the smoke of sacrifice rose from the Pantheon, and when cameleopards and tigers bounded in the Flavian amphitheatre. The proudest royal houses are but of yesterday, when compared with the line of the supreme Pontiffs. That line we trace back in an unbroken series, from the Pope who crowned Napoleon in the nineteenth century to the Pope who crowned Pepin in the eighth; and far beyond the time of Pepin the august dynasty extends, till it is lost in the twilight of fable." The opinions here expressed by Macaulay have been shared by many; and when it was announced, towards the close of the last year, that the Roman Pontiff, Pio Nono, whose lengthened and eventful reign had already been rendered remarkable by changes spiritual and temporal, not only within the territories of the church, but among the great nations of Europe which acknowledged his spiritual sway; when it was officially announced that a council of the dignitaries of that church, such as had not been held for three hundred years, had been summoned, and that the princes of the church were gathering to Rome, from Greenland's icy mountains and Afric's golden sands, "all the world wondered," and the attention of thinking men, Protestant as well as Catholic, was excited, and continued with more or less interest to watch its proceedings from 8th December, 1869, its opening, to midsummer, 1870, when the long-disputed dogma of Papal Infallibility was affirmed, but not without opposition from a powerful minority.

THE PAPACY.

The Council had scarcely adjourned when the necessities of the Emperor Napoleon compelled the withdrawal of the French troops from Rome, and the 20th September will be ever held in memory on account of the surrender of Rome on that day to General Nino Bixio, the commander of the Italian army; and thus the temporal sovereignty of the Pope has apparently fallen,—having endured upwards of eleven centuries. Some have called this the fall of the Papacy, which others consider erroneous. The rules of our Society wisely prevent us from discussing matters religious and political, and this pertains to both; but it is not out of order to note the historical fact; and it may also be permitted to state that there exists much difference of opinion, not among Protestants only, but among Catholics themselves, on the question, some maintaining that the loss of the temporal power may involve the breaking-up of the whole grand fabric, and bring about the destruction of the spiritual power; while others as confidently assert that this was all that was wanted, and that the laying down of the temporal sword will increase the power of the sword of the spirit, and that all Catholic nations will henceforth yield to the spiritual Pope a more willing and thorough obedience. It must be noted, however, that Pio Nono himself has entered his most solemn protest against what he deems an act of spoliation, and that he has been joined in this by prelates of the Catholic Church in the British dominions as well as elsewhere.

OBITUARY.

As interesting Quebec, I may refer to the recent death of Archbishop Baillargeon, a man fervent in spirit, zealous in good works, of a deep but unostentatious piety, of great humility, and abounding in Christian charity. He was endeared to every member of his own church, and respected by the Protestant community.

Canada has also, this year, to deplore another " great man fallen in Israel," in the person of the late Revd. Alexander Mathieson, of St. Andrew's Church, Montreal, who ministered to its congregation for nearly half a century. His bearing to the community in general was marked by affability and courtesy ; while his congregation looked upon him as a father. The poor were the especial objects of his care. His death marks an epoch, not only in St. Andrew's Church, but in the courts of the Presbyterian Church of Scotland in Canada, where he always occupied a prominent position.

In the general obituary, the world has to lament the premature death of Charles Dickens, the great novelist, moralist, and lay preacher, at a time when his sun was still shining bright in the high heaven of literature. It has been truly said, that in all that he has written, not an expression can be found which could raise a blush on the cheek of maiden innocence. It may be also alleged of this great magician, as of Shakespeare, that " all who have studied his successive approaches to perfection, must see that he united the closest study to the keenest observation ; that he attained the highest pitch of dramatic art, and the most accurate philosophy of the human mind ; and that he was a profound artist, and not a blind and wildly-luxuriant genius."

FIRE.

1870 will be ever memorable for the conflagrations which have devastated several portions of the Dominion.

On Tuesday, 24th May, at 1 a.m., a serious fire broke out in the suburb of St. Rochs ; and notwithstanding the energetic exertions of the citizens, and the active aid of the soldiers of the garrison, before it was subdued, 300 houses were consumed.

Then followed the calamitous fire in the Saguenay district, which inflicted great suffering on the inhabitants, and which might have been much more severe had it not been for the energetic conduct of a few men connected with the district, who, by their prompt action with the government, and with their influence in the great cities of the Dominion, were enabled in a very short time to forward to the sufferers supplies that were needful.

The community had scarcely recovered from the alarm produced by these great fires in the Province of Quebec, when it was called upon to sympathize with Ontario under an equally great affliction. In Ottawa, Carleton, and North and South Lanark counties, the fire raged with terrible fury. I have been unable to lay my hand on the statistics in connexion with the fires in the Lower Province ; but it is stated that in Ottawa county 240 families, in North Lanark 40 families, in South Lanark 60 families, in Carleton 600 families, in all 940 families, were rendered homeless.

Some may look upon these visitations as direct from Providence. But with the experience of the past, who can doubt that they originated in the utter carelessness and improvidence of man, who, totally regardless of past experience, built up a suburb of materials which must sooner or later provoke its doom ? It may be supposed that this assertion will not apply to the fires in the woods ; but there can be little doubt that, though there was less criminality involved, they also originated in carelessness. I think that there was criminality in connexion with the fire in St. Rochs, but I do not wish it to be inferred that I point to incendiarism; on the contrary, I think the criminality attaches not to those alone who erected the wooden buildings in defiance of the law of the land, but more to the municipal authorities, who closed their eyes to the fact that such buildings had been erected. Still greater will be the responsibility should in the future any buildings of combustible material be permitted to be erected within the limits of the Corporation.

THE EARTHQUAKE.

On Thursday, 20th October, I was sitting in my parlor in Berthelot street, reading a biography of the Archbishop which had appeared in the *Journal de Québec.* I had just reached the conclusion of the Archbishop's remarks to the students, and was reading its concluding words, "*Sic itur ad astra,*" when I thought my Newfoundland dog had got into the room and was scratching himself below the table; but looking below, I found I was mistaken, and at once became sensible that it was an earthquake. I mechanically got up, and taking out my watch, and making allowance for a few seconds lost, I found that it was just 23 minutes past eleven: the force of the motion very much increased for about a minute, but I could not say that it was in any given direction. I cannot describe the motion better than in the language of Scripture: "the earth trembled and shook." At 24 minutes past eleven, the motion was so violent that my heart sunk within me, as I thought the house was about falling; at this moment my daughter came into the room, and, placing her hand on my shoulder, said, with accents and look of great terror: "Oh, father, I am dreadfully frightened." At that instant the force suddenly ceased, and I noted a slight tremulous motion for thirty seconds more, when everything was still. I held my watch in my hand for five minutes more, expecting a second shock, but there was no repetition. Nothing was displaced in the room, though everything, especially articles on the sideboard, participated in the motion. My sister, who happened to be in the hall, felt the shock very slightly. The servant, had we not talked of it, said she would have thought it was only a cab passing. The shock was felt very differently in different parts of the city. Some estimate its duration at 30 seconds, some at three or four minutes; some felt two shocks after a short intermission, some only one, protracted, but increasing and diminishing in power. Mr. Peebles says it was felt very severely at the Gas-Works, and that there were two shocks, with a distinct interval. I am not aware of any one noting the time of duration by watch but myself. I asked Captain Ashe, who, I thought, would most likely have observed, and he told me that though he had an excellent opportunity of noting the time, having been in the Observatory, yet he was so absorbed with the violence of the motion that he had not thought of it, but he was under the impression that it had lasted about three-quarters of a minute. Putting all accounts together, it was the most severe shock felt for two hundred years in Canada; and if the accounts received are reliable, it was attended with great destruction of property and serious loss of life in the neighbourhood of "les Eboulemens" and St. Paul's Bay.

Dr. Smallwood, of the Montreal Observatory, has published some very interesting notes on the meteorological phenomena which he observed. According to his statement, the shock occurred at Montreal at 11.17, just six minutes in advance of Quebec; and the direction seemed to have been from S.W. to N.E., and the tremulous wave of motion was of ten or twelve seconds' duration; and after an interval of a few seconds, a second shock occurred, of less duration and of less intensity, lasting only from five to eight seconds. He gives the following account of his observations of the usual meteorological phenomena of the few days preceding the earthquake and up to two o'clock on Thursday afternoon, the 20th of October:

"Rain fell on the thirteenth day, followed by a rise in the barometer, and a splendid display of the aurora borealis on the night of the fourteenth day. Numerous and very large spots were present on the solar disc, and which had been the case for some considerable time, more especially during the presence of the aurora on the nights of the 23rd, 24th, 25th and 26th days of last month (September).

" The maximum reading of the barometer at seven A.M. on the morning of the sixteenth day indicated 30.215 inches, and was succeeded by a very fine, warm day, the mean temperature of which was 63.9 degrees, wind S.W. Showers of rain fell on the 17th, from ten A.M. till three P.M., with a west wind, and with a falling barometer, which at nine P.M. of that day stood at 30.000 inches. From one A.M. of the 18th (Tuesday), a very rapid and sudden fall was observed, viz., 0.639 of an inch in six hours; and it attained its minimum, 29.361 inches, at seven A.M. on that day.

" From that hour, a gradual and somewhat sudden rise took place, accompanied by a very heavy gale of wind. The clouds were passing from the west, but the wind veered to all points of the compass. The register of the anemometer at the Observatory shews a complete disc of concentric circles, with a velocity varying from thirty-five to fifteen miles per hour.

" There was also a rise of 0.507 of an inch in the barometer, with a falling temperature. Frost occurred during the night, and a good breeze continued from the west. The thermometer at seven A.M. shewed 33.1 degrees, and the barometer 30.070 inches.

" From this time the temperature rose and the barometer fell, and this morning, at 7 A.M., stood at 29 4.99 inches. Rain set in during the night, and at 7 o'clock 0.214 of an inch had fallen: thermometer, 42 degrees; wind, S.W.; mean velocity, 3.14 miles per hour.

" At 11 h. 17 m., Montreal mean time, a very considerable shock of an earthquake was felt generally throughout the city; its direction would seem to have been S.W. to N.E.; the tremulous wave of motion lasted for from 10 to 12 seconds, and was succeeded by a slight interval of a few seconds, when a second shock occurred, of less duration and of less intensity, lasting from five to eight seconds. No wave of sound was perceptible, and the wave of motion was undulating and in a straight line (rectilinear), and of considerable elevation. Domestic articles rocked to and fro, but no damage to buildings has resulted.

"The magnets were very sensibly affected at 10.30.

"The barometer is still falling. At two P.M. it stood at 29.299 inches; thermometer, 44.8 degrees; wind S.W., with rain.

"Professor Kingston telegraphs me that the magnets at the Toronto Observatory shewed slight shocks at ten minutes to eleven."

N.B.—Though it was felt on the surface above a mine in the Eastern Townships, it was not felt in the mine itself. Quebec observers say the motion was nearly from east to west.

THE FRANCO-PRUSSIAN WAR.

When, early in the past summer, the Emperor Napoleon "cried havoc and let loose the dogs of war," the great powers of Europe generally disapproved of the step. The cry on the one side was, "on to Berlin!" on the other, "on to Paris!" and the records of public opinion shew that in whatever direction sympathy went, there was a very general feeling that, sooner or later, France would dictate terms to Prussia, in Berlin. The fortune of war has mocked to scorn all expectations; the speculations of the wise and of the foolish have been equally astray. We have seen two of the greatest nations of Europe, armed with the most destructive engines of war which the world ever saw, meet in the shock of battle, with armies outnumbering anything in history. We have seen fair France devastated, and its mighty fortresses laid low; and turning to its Emperor, we involuntarily recall the words of Mark Antony:

> "But yesterday, the word of Cæsar might
> Have stood against the world; now lies he there,
> And none so poor to do him reverence."

When we read of the fervent prayers which hourly ascend from the altars in France, and the pious unction with which King William in his telegrams to his Queen thanks a kind Providence for victory, the shout of which is overpowered by the shrieks and groans of the wounded and dying, we can then see the force of what Jeremy Taylor wrote:—"I have lived to see religion painted on banners and thrust out of churches; the temple turned into a tabernacle, and God worshipped, not as the Prince of Peace, but appealed to as the Lord of Hosts. When religion puts on armour, and God is not acknowledged by his New Testament titles, religion may have in it the power of the sword, but not the power of godliness."

THE "CAPTAIN."

Among the disasters of the year stands prominent the loss of H. M. ship "Captain," which foundered off Cape Finisterre at 12.15 of the night of 7th September. Captain Burgoyne, her commander; Captain Coles, her projector; and all her officers and crew, amounting to 500 souls, perished, with the exception of second-gunner May and seventeen men. Captain Burgoyne was seen for some time on the bottom of the capsized steam launch, and several attempts were made to rescue him by the only boat saved; but, unfortunately, they were unsuccessful. The interest which Quebec felt in this sad accident was increased by Captain Burgoyne having been for a season in Quebec, in command of the "Constance," when he was well known to its society; and also, as among those who perished, was

Sub.-Lieutenant Herbert T. Murray, well and favorably known to many of us as a midshipman of the "Aurora" during the long period of her stay in this port.

The evidence before the Court of Enquiry leaves no doubt that her loss was occasioned by an error in the construction of her hull, which made her two feet deeper in the water than it was intended by Captain Coles she should have been; and also by her having been overmasted, which made her top-heavy when her topsails were set in the gale. This experience has been too dearly bought, as it has cost the lives of nearly five hundred men and half a million of pounds sterling. It is satisfactory to know that the Court not only acquitted Mr. May and the saved boat's crew, with honor, but awarded them great praise for their conduct and exertions to save their officers and comrades.

When I reflect on this terrible accident, and couple it with the equally awful cases of the "City of Boston" and the "Cambria," I recall and fully appreciate the well-known lines of Mrs. Hemans to the insatiable sea:

"High hearts and brave are gathered to thy breast!
They hear not now the booming waters roar;
The battle-thunder will not break their rest.

* * * * * * * * * *

"Give back the lost and lovely! those for whom
The place was kept at board and hearth so long!
The prayer went up through midnight's breathless gloom,
And the vain yearnings woke 'midst festal song!

* * * * * * * * * *

"To thee the love of woman hath gone down;
Dark flow thy tides o'er manhood's noble head—
O'er youth's bright locks and beauty's flowery crown;
Yet, must thou hear a voice: Restore the dead, thou sea!"

PEACEFUL TRIUMPHS.

It is pleasing to turn from the record of great calamities to note the peaceful triumphs of industry, among which stand prominent the success of the Suez Canal and the Great Pacific Railway, which, though completed and opened before the close of 1869, have really only been proved during the current year. To M. de Lesseps alone is justly due all the credit of the completion of the first; and it will ever stand, while it does stand, a monument of his skill, perseverance, and indomitable energy, and a reproof to politicians whose hostility retarded its construction for many years.

The Great Pacific Railway, in its grandeur, rivals the canal, and shews what can be done by a free people under an enlightened government. This great road got its charter and was commenced in 1862; its whole length, 1774 miles, was completed and the road opened on 10th May, 1869. Our wonder is not diminished when we know that it traverses the great American desert, and crosses the lofty Rocky Mountains; that it has 30 miles of snowsheds and 15 tunnels—one, 1½ miles long, through solid granite rock; and lastly, that by it we are now enabled to receive in Quebec, by regular mails, letters bearing the San Francisco post-mark seven days previous. Canada, during this time, has not been idle, as the numerous railroads now under construction in Ontario amply testify. We may note, also, the satisfactory progress made by the contractors of the "Intercolonial Railway," as detailed in the recent report of the commissioners,—a progress which leads us to hope for its completion within the time promised.

I must now allude to an undertaking rapidly approaching completion in the neighbourhood of Quebec, which, I believe, is calculated to exert a beneficial influence in itself, and will also incite to similar efforts in this part of the Dominion. I feel pride in saying that the "Gosford Wooden Railway" was the conception of a member of our Society, Mr. Charles Fitzgerald; that he was seconded by Mr. Oakes, late of the Engineer Department, and that its feasibility was established by Mr. Rickon, also of that Department. After these gentlemen had given it *being*, as it were, they were encouraged in the effort by the enterprising contractor, Mr. Hulbert, whose great practical experience and sound judgment did much to secure its being undertaken on correct principles. The support of Mr. Joly, as a private gentleman, and his untiring efforts and influence in the legislature, ably seconded by Mr Speaker Blanchet, Mr. Lemesurier, Mr. Garneau, Mr. Henry Fry, and others, did everything else that was wanting. This is the true history of the Gosford Railway. It was originated by a member of our Society; the first public meeting in connection with it was held in our rooms; and though I freely admit I could do nothing else, I have some satisfaction in knowing that at that meeting I moved a vote of thanks to Messrs. Fitzgerald, Oakes and Rickon, wishing them "God-speed." I am gratified at their success, and pleased to find that other municipalities are following in their footsteps; and though I have never been so sanguine as to think that such undertakings are likely to yield a dividend, I firmly believe that the indirect benefits which they confer on the community fully justify liberal grants on the part of government and the municipalities, as have been so wisely given in the case of the Gosford Railway.

In mentioning the proposed "North Shore Railway," I shall simply say that the project is now under consideration by the legislature, and that there is some reason to hope that a way may be found by which a road suitable to the wants of so important a district may be built at no distant day; and I am also happy to say that one of our Vice Presidents, Mr. H. S. Scott, has already pointed out the wisdom of enquiring into modern views in this connexion before its plan and equipment shall be decided on; and in connexion with this, I may add that at the late meeting of the British Association the question of railways was discussed, especially as to the guage for the future. Mr. R. S. Fairlie asserted that a 3-foot guage had been proved to carry two-and-a-half-times as many tons of traffic as were now carried over the 4-foot-8½-inch guage of the North-Western Railway, and this without an additional shilling for haulage. Every inch added to the width of a guage beyond what was absolutely necessary for the traffic, would necessarily add to the cost of construction, increase the proportion of dead weight, increase the cost of working, and, in consequence, increase the tariffs to the public: consequently, by just so much reducing the width of the line, railways could be made cheaply, and at the same time thoroughly efficient. There was no country too poor to have railways sufficient for its requirements, and they furnished the cheapest possible mode of transport.

Mr. J. B. Fell supported the narrow in opposition to the broad-guage principle, and also the application of the centre-rail system to mountain lines. To illustrate the economy and carrying capacity of a narrow-guage line, he had constructed a mile of line on an eight-inch guage, at Low Furness, in Lancashire, at a cost of £1,000. It was capable of carrying from 100,000 to 150,000 tons per annum, and it would run at the rate of fifteen to twenty miles an hour with steadiness and perfect safety. This plan of railway would be especially useful for military purposes in such expeditions as that of Abyssinia: he had submitted his plans to the war-office authorities, who had them now under consideration.

ECONOMIC INDUSTRIES.

Would time have permitted, I wished to have said something of the economic interests more immediately affecting Quebec; of the decline of shipbuilding; and of the new industries which some enterprising citizens have substituted —such as the great Shoe and Rubber Factories; the great Furniture Workshops; the Foundries and the Carriage Spring Factory; the Chemical Works for the production of Sulphuric Acid, &c., &c.; and lastly, the Harvey Hill Copper Mine, the Chaudière Gold Field, and the Iron Sand of the Moïsie; but I must defer this to another opportunity. Yet, I cannot omit the occasion to refer to a branch of industry which, though almost inexhaustible and incalculable, and the products of which are always in unusual demand, are prosecuted by us with little vigor, and are almost left to our more enterprising fellow-colonists of Newfoundland and our shrewd and more go-a-head neighbours, the Yankees. I allude to the Fisheries of the St. Lawrence and the Labrador coast. It ought to be made known that a vast number of Newfoundland fishermen annually resort to the coast of Labrador for the prosecution of the Cod, Herring and Salmon Fishery. Some take their families, and remain on the beach till the month of October. They caught in 1869, on the Labrador coast:

Codfish, quintals	308,366
Herring, barrels	33,135
Salmon, tierces	250
Cod Oil, tons	288

The total yield of cod to Newfoundland in the year 1869 was 1,204,086 quintals of codfish, so that Labrador alone gave one-third of the catch. But besides this, fishermen from the United States and elsewhere caught large quantities, giving an estimated value of £1,000,000 sterling, and to the whole fisheries of the Gulf a total of £3,000,000 sterling, exclusive of home consumption; so that the annual product of the fisheries of British North America may be valued at about $15,000,000.

I have said that this source is almost inexhaustible, for Buffon tells us that a single pair of herring, if left to breed unmolested for twenty years, would yield a quantity, in bulk, equal to the size of our globe; but the fecundity of the cod is still greater, there having been found in the roe of one female no less than 8,000,000 eggs. The Grand Bank, which is six hundred miles long by three hundred in breadth, has been fished for 350 years without any show of exhaustion, Catholic countries alone receiving from it, annually, cod to the value of £500,000 sterling. Yet, as the Rockall, Faroe Isles and Great Doggar Bank have given decided indications of failure, and as the cod is a fish of comparatively slow growth, only increasing from eight to ten ounces per annum, there may be danger of exhaustion ; and it has become necessary to consider the propriety of establishing and enforcing regulations such as have been found necessary in connexion with the River and Lake Fisheries. I have seen it stated, with great satisfaction, that Messrs. McKay & Warner have now in process of building in their shipyard several vessels intended as the pioneers of a fishing fleet. Let us hope that we who are here to-night may live to see such fleets leave our harbour as are annually sent forth from the hundred flourishing ports of New England, and that we may be participators in that inexhaustible wealth which has converted the rock-bound and sterile coasts of that industrious country into gardens. This, I believe, would be the most satisfactory way of ending the "Fishery difficulty."

DISCOVERIES IN SCIENCE AND ART.

Great advancement has been made in chemistry by the discovery of cheap modes of preparing hydrogen and oxygen ; by the extended use of the permanganates in bleaching and disinfecting ; by the cheap manufacture and general use of the hydrate of chloral, which some view as only next in importance to chloroform ; and in the production of ice, on a commercial scale, by the liquefaction of gases. In photography, the Alberttype has enabled us to take one housand prints a day with durable ink. Improvements have also been made in the manufacture of glass, and in the use of salts of baryta, fluor spar, and salts of thalium, for optical purposes. Then we have metallic manganese in combination with copper—cupro-manganese, a white alloy, a substitute for German silver ; and glycerine for the conversion of refuse sponge into elastic sponge, for mattrasses and cushions.

We have also discovered how to ventilate under-ground railway carriages ; how to blow bundles of letters from pillar to post through under-ground tubes ; how to make a good bright-green color without admixture of arsenic ; how to produce combustible flint; how to prevent the waste of water at drinking fountains; how to make a durable pavement of asphalt; how to render the surface of common roads more fit for traffic; how to manufacture mouldings, foliage, and statuettes, from a mixture of glycerine and litharge; how to make "*dynamite*" from nitro-glycerine and sand, possessing all the power of nitro-glycerine without any of its dangerous properties; how to utilize sewage, prevent boiler explosions, and the injurious action of lead pipes on water; how to send two messages along a telegraph wire (one from each end) at the same time; how to increase the break-power of railway trains, and thereby diminish the chance of accidents. These are among the notions, inventions and speculations which have been put forth during the past year; also, the new process, by Mr. Weldon, of manufacturing chlorine, in large quantities, by blowing large quantities of atmospheric air into the liquor under treatment.

SACERDOTAL STATISTICS.

I shall conclude by directing your attention to an item of statistics which must be of great interest. Mr. Lovell's Canadian Dominion Directory, now in course of publication, gives the following sacerdotal statistics:

Anglican bishops	10
Roman Catholic bishops	18
Church of England clergy	633
Church of Rome clergy	1226
Church of Scotland clergy	187
Other Presbyterians	464
Methodists	1067
Baptists	326
Congregationalists	76
Other denominations	174
Total	4181

This is, as nearly as possible, one clergyman for every 1000 inhabitants in the Dominion—men, women, and children.

P. S.—*The Eclipse of Dec. 22nd.*—Since the preceding paper was read, a total eclipse of the sun took place on the 22nd of December. It was looked forward to by astronomers with more than usual interest, as it was hoped that it would afford an opportunity of removing doubts and verifying observations not very satisfactorily completed at the last eclipse. The results have not yet reached us, further than that a general statement indicates that the observations were favorable, and confirmatory of views promulgated after the last eclipse. The British expedition met with a great disaster by the shipwreck of the vessel which was conveying its instruments to the Mediterranean. Common people awaited the eclipse on this side of the Atlantic with no little anxiety, as it had been predicted, on authority, that a great tidal wave might be produced, which might create great destruction on our coasts. Happily, this prediction was nowhere realized, and is already almost forgotten.

The Completion of the Mont Cenis Tunnel.—The completion of the Mont Cenis Tunnel on the 26th of December, coupled with the opening of the Suez Canal and the great Pacific Railway, has rendered our age one of great and wonderful engineering triumphs.

PAPER II.—NOTES ON THE COPPER DEPOSITS AT HARVEY HILL.

BY JAMES DOUGLAS, JUNIOR.

(Read before the Society, Dec. 21st, 1870.)

WE adopt Von Cotta's classification of mineral deposits into the four following divisions:

I.—Beds;

II.—Segregations;

III.—Impregnations;

IV.—Veins.

I.—*Beds* are regular deposits with well-defined limits, which were formed subsequently to the strata beneath and prior to the overlaying strata, except where the bed is still in course of formation, when, of course, there are no overlaying strata. An ore-bed, therefore, is a member of the series of rocks in which it occurs.

II.—*Segregations*, on the other hand, are irregular masses of definite limits, formed after the rocks in which they occur. Segregations of pyrites are found filling what were caves in limestones and small fissures in slates.

III.—*Impregnations* differ from segregations in not possessing definite limits, and from beds not only in not possessing definite limits, but frequently in the ore which composes them having been deposited subsequently to the formation of the rock in which it is found. Many instances of rocks impregnated with ore occur in Europe and on this continent. The ore may be distributed in sheets between the layers of slates, or scattered in grains throughout a bed of sandstone.

IV.—*Veins* differ from all these by being limited in length and breadth, but practically unlimited in depth. There are what are called *gash veins;* but these are segregations, not veins at all. True, veins fill fissures in previously-formed rock. They may be parallel with the strata, or cut them at any angle, accordingly as the rocks were split or yielded to the disturbing forces along the lines of stratification. The limit in depth of a true vein has never been reached. Veins taper away to nothing at either end, and vary in width, here bulging out and there contracting to a thread ; but as yet, no shaft has been sunk deep enough to reach the point where a vein begins.

These several forms of ore-deposits are subject to endless modifications ; and it is often impossible to say whether a given deposit can be classed under any of them. They also occur separately and combined, as might be expected, when we try to imagine the manner of their formation.

A bed we can easily conceive of as being formed from the mineral constituents of mineral springs, whose waters, after rising through fissures, collect into lakes. The same process is now going on, and beds of iron ore are forming in this very manner at the present day. A bed thus formed would be accompanied by a lode. The mineral sediment in the bottom of the lake would form the bed, and the same, filling the fissure by which the spring has reached the surface, would form the vein. The mineralized water would overflow the banks of the lake (unless evaporation went on as rapidly as it now does in the Dead Sea, where a vast bed of chloride of sodium is forming), and give rise to other lakes, in whose bottom the mineral would be deposited, forming beds, unassociated with veins ; or, beside filling basins, it might find its way into crevices in slate-rocks or caves in limestone, and produce segregations. Subsequent geological changes might cover those beds with strata of slates or limestones, or of some igneous rock, as the case might be.

Veins and impregnations might reasonably be often looked for together.

If the stone impregnated with mineral be sandstone, we can conceive of its having become mineralized through the mineral solutions soaking through it, either from the surface or laterally from fissures in itself or neighbouring rocks. Most beds of sandstone were, however, probably mineralized at the time of their formation. The stream of mineralized water which, if sluggish, would give rise to a bed of solid ore, would, if rapid, disintegrate the rock over which it flowed, and deposit a sandy sediment with its mineralized precipitate; so we can also easily imagine the mineralized solution, if it should flow over a slatey bed, slowly percolating through the slates from the surface, and giving rise to an impregnated slate-bed unassociated with a vein; while we can as easily account for the instances in which impregnations in slates and veins occur together, by supposing a lateral percolation directly from a vein-fissure.

The mineral deposits at Harvey Hill afford a striking instance of impregnated slate-beds, accompanied by veins.

Attention was first directed to that locality as a mining region by the wonderfully rich outcrops of what appeared true lodes of copper ore. One of these was traced for nearly 100 fathoms along its strike; but they were all found to thin out in depth. Nevertheless, Mr. Williams (late superintendent of the English and Canadian Mining Company), satisfied of their being lodes, ran an adit for 248 fathoms through the Hill, midway between two principal groups of lodes. Most of the lodes run 20° E. of N., some few only nearly due E. Mr. Williams ran his adit 42° W. of N.; so that it certainly would have cut some of the lodes in depth had their course not been interfered with by the bed, as we shall subsequently see. Mr. Williams would have run his adit at a far lower level, and in a somewhat different direction, had he known what we know now; but his plans were not unwisely made from existing appearances.

In sinking a shaft, known as Frémont's shaft, on the summit of the Hill, on a lode which yielded for a time a great deal of ore, at 15 fathoms below the surface was found a layer of slate carrying copper pyrites; beneath this were some fathoms of barren slates, and then a thin layer of cuperiforous slates resting on a bed of steatite itself, sparingly impregnated with purple ore. In this part of the bed the ore is not of a workable quality; but it comes to surface in a depression of the Hill to the W., where a quantity of rich slates have been extracted.

Subsequently, another ore-bed was struck in grass-shaft No. 2 of the adit. It comes to surface at about 20 fathoms S. of the shaft. At its outcrop the slates carry about two per cent. of copper as yellow sulphuret; but when struck in the shaft, it yielded in places purple ore, and borings fairly made over an extent of several fathoms gave 3.5 per cent. of copper. It fell off in produce, though not in thickness, towards the W., and gave out altogether towards the E., so that work was discontinued at that point. This is unquestionably the same bed as was subsequently struck in Kent's shaft, 154 fathoms to the W.; and there is little doubt but that it extends over the whole intervening span, as it has been struck midway in a shaft begun by Capt. Williams, and completed since he left the mine.

Below the bed met with in the Frémont shaft (the 2nd bed), there is reason to think there occurs another, for copper-bearing slates were met with in the adit, at 20 fathoms from its extreme end.

There thus appears to be three beds, which, if they extend over the entire Hill, would exist at the following depths below the surface at Kent's shaft:

I. The uppermost bed, cut in grass-shaft No. 2, and from which a great deal of ore has been extracted by the Kent shaft, at 20 fathoms from the surface;

II. The second bed, that lying on the soapstone in Frémont's shaft, which should be at about 60 fathoms from the surface ; and

III. The lowermost bed, that met with near the end of the adit, and which should be at about 20 fathoms deeper still, or at 80 fathoms from the surface.

There is, however, no likelihood of these beds being of such great extent, and it is certain they are not of the uniform richness at one time attributed to them.

It was in sinking Kent's shaft to strike two adjacent lodes, known as the Hall and Campbell lodes, in depth, that the first bed was struck, at 20 fathoms from the surface. It then yielded a percentage of copper, which tempted Captain Williams to open it up at a lower level. After, therefore, sinking seven fathoms further, he drove a cross-cut, and struck the bed, as expected, at a point where its yield was quite as good as at the 20-fathom level. At these spots, which happened to be peculiarly rich, through causes which will be apparent as I proceed, the slates, after being roughly picked over, yielded 3.5 per cent. to 5 per cent. of copper. Subsequently, levels were driven from the 20 and 30-fathom cross-cuts, both E. and W. : a cross-cut was run at 10 fathoms from the surface, till it struck the bed, and about 8,000 tons of crude ore broken between these different points. But the sanguine expectations entertained of the permanency of the yield have not been realized. Except towards the north, the bed has in no direction given out altogether ; but in the other directions it has become so poor as not to repay the cost of extraction.

While working on the bed, however, discoveries have been made which have altered the whole aspect of the mine, and promise to enhance its value.

In driving the 30-fathom cross-cut, a mass of ore of irregular shape was met, which yielded 50 tons of 43 per cent. ore. It thinned away to a mere stringer. In driving E. on the bed from the end of the 30-fathom cross-cut, another mass of ore was struck, which was concluded to be of the same description as the previous. But on following it, it proved to be a regular lode, though it was not for a long time recognized as such, so strong was the prejudice for lenticular masses. Capt. Williams drove an inclined shaft upon it for 40 fathoms, and stoped a considerable quantity of ore from the back and bottom, but abandoned operations on it till a vertical shaft should be sunk on it at a point further down the hill. Still, persuaded that the bed yielded on an average 3.5 per cent., he thought that operations could be most economically confined to it. For several years, while concentrating works were being erected, and after their destruction by fire, when on the eve of commencing work, reconstructed, no ore was raised. On their completion, last winter, the bed-ground was delivered at the works, unmixed with ore broken from the lode, and found to average considerably less than was expected.

Just then the unusual appearance of what was supposed to be a mere bunch of ore attracted attention in the slope to the W. of Kent's shaft. At its first appearance, it broke through the floor of the bed, and seemed as though it had discharged its copper into the lowermost layers of the copper slates; but, as it was followed in sloping the bed, it worked its way up through the slates, and assumed the features of a lode with well-defined walls, terminating funnel-shaped in the bed, and pouring its contents into the bed. One could trace the course of the streams of copper and bitter spar and calc spars, as they percolated from the lode among the slates. This at once created doubts of the old hypothesis, that the bed was the source of copper, and that the veins were merely gash-veins or segregations filled from the bed. One could hardly doubt the reverse being the case, or that the bed had derived its copper, quartz, lime, and magnesia, from the veins, which in that case would not be gash-veins or lenticular masses, but must be true lodes. Subsequent operations and observations have tended to strengthen this view.

There seem to be several lodes entering the bed near Kent's shaft, all parallel in their strike, which is the same as that of most of the outcrops, viz., 20° E. of N. The only one on which much work has been done is the Fanny Eliza lode. As previously stated, where it was first noticed to carry copper was in driving E. from the 30-fathom cross-cut, at a point where the copper-bearing slates thinned away to nothing. The lode was then very small, but widened rapidly as Capt. Williams drove upon it.

The work now being done on the Fanny Eliza is at the end of the winze. The lode is from 20 inches to 24 inches in width, and very regular in both strike and dip, which is slightly to the W. The ore, as it comes to surface, yields from 8 per cent. to 12 per cent. of copper. It separates in crushing very perfectly from the gangue, and is, therefore, easily concentrated to from 40 to 50 per cent. It consists of a mixture of grey and purple sulphurets. When the lode enters the bed, it carries a good deal of yellow and no grey ore; but the yellow entirely disappears in depth. The ore occupies the centre of the lode, whose matrix consists of calc spar, some quartz, and a great deal of bitter spar, in whose composition iron replaces part of the magnesia. Very perfect crystals of bitter spar occur imbedded in the ore.

Tracing the lode upwards, but beneath the bed, and beyond the spot where it first attracted attention, it is seen in the 30-fathom cross-cut as a well-defined lode of about 8 inches wide, but carrying very little copper, and has been reached in a level driven upon it from the bottom of Kent's shaft, where, however, it is thin and irregular, though highly charged with copper. It does not enter the bed in at all the same manner as the lode previously described. In fact, the floor of the bed shews no indication of its existence beneath;

for when sunk upon, two fathoms of broken ground, consisting of alternate layers of quartz and spar, carrying rich bunches of ore and of slate, were raised before the lode assumed its regular form in strike and dip. In these shapeless masses of ore and spar are found chloritoid, sulphuret of molybdenum and quartz-crystals, with their angles rounded off as though they had been exposed to the action of a solvent. I have specimens of ore studded thickly with such crystals, some of which are several inches long, and as much as an inch in diameter, with their faces almost effaced and dimmed. The cavities in which these crystals rest are often coated with a greenish layer, which Dr. Hunt supposes to be a silicate of copper. These crystals are not found at any depth in the lode, but only in the irregular masses which occur in the disturbed slates beneath the bed, where, from some unexplainable cause, the regular fissures were interrupted by the bed; and the mineralogical solution they conveyed toward the surface, not finding a ready exit, forced its way through the slates. These, however, would act as a sieve, by which any solid particles, such as quartz-crystals, which the solution might carry in suspension, would be arrested. The only other spots where they occur thus rounded are at the outcrops of the lodes.

To the east of the Fanny Eliza two lodes enter the bed. Some work has been done on one of them. It appears to be cut by the bed, which severs it like a wedge. It runs parallel with the Fanny Eliza, and, like it, increases in size in the direction of its dip, but diminishes towards the rise. It appears, however, to proceed to surface above the copper-bearing bed, as though the bed had merely intervened without otherwise disturbing its course.

The only instance in which a lode has been found fairly cutting through the floor of the bed and retaining the distinctive characteristics of a lode, while in the copper-bearing slates, is that already referred to. It is at about five fathoms to the west of the Fanny Eliza lode, and first appeared in the floor of the bed immediately west of the spot where that lode thins out; so that it is probably a continuation of the Fanny Eliza, which is there spliced. As it has been driven upon, it has gradually invaded the bed, spreading out fan-like, and discharging its contents in little rivulets among the slates. It carries purple ore, mixed with yellow. It is very interesting to notice how the slates gradually decrease in richness in proportion to their distance from the lode, and how the color changes from grey to black as the quantity of magnesia and lime in their composition decreases. In the immediate vicinity of the lode, the bed carries purple ore on the floor and yellow towards the roof, and the slates are nacreous. At five or six fathoms distant, there is nothing but yellow sulphuret of 32 per cent. richness, which at a greater distance changes into bell-metal ore of not over 25 per cent. produce; while the slates carrying the ore are the usual black slates of the region, and the magnesia does not to any great amount enter into their composition, but forms, with lime and the copper, very narrow bands between the layers. I shall not be surprised to find the bed cease to carry any copper as soon as the lode has quite cut through the roof. That the lode reaches the surface there is no doubt, as its position exactly corresponds with a very promising outcrop to the west of Kent's shaft.

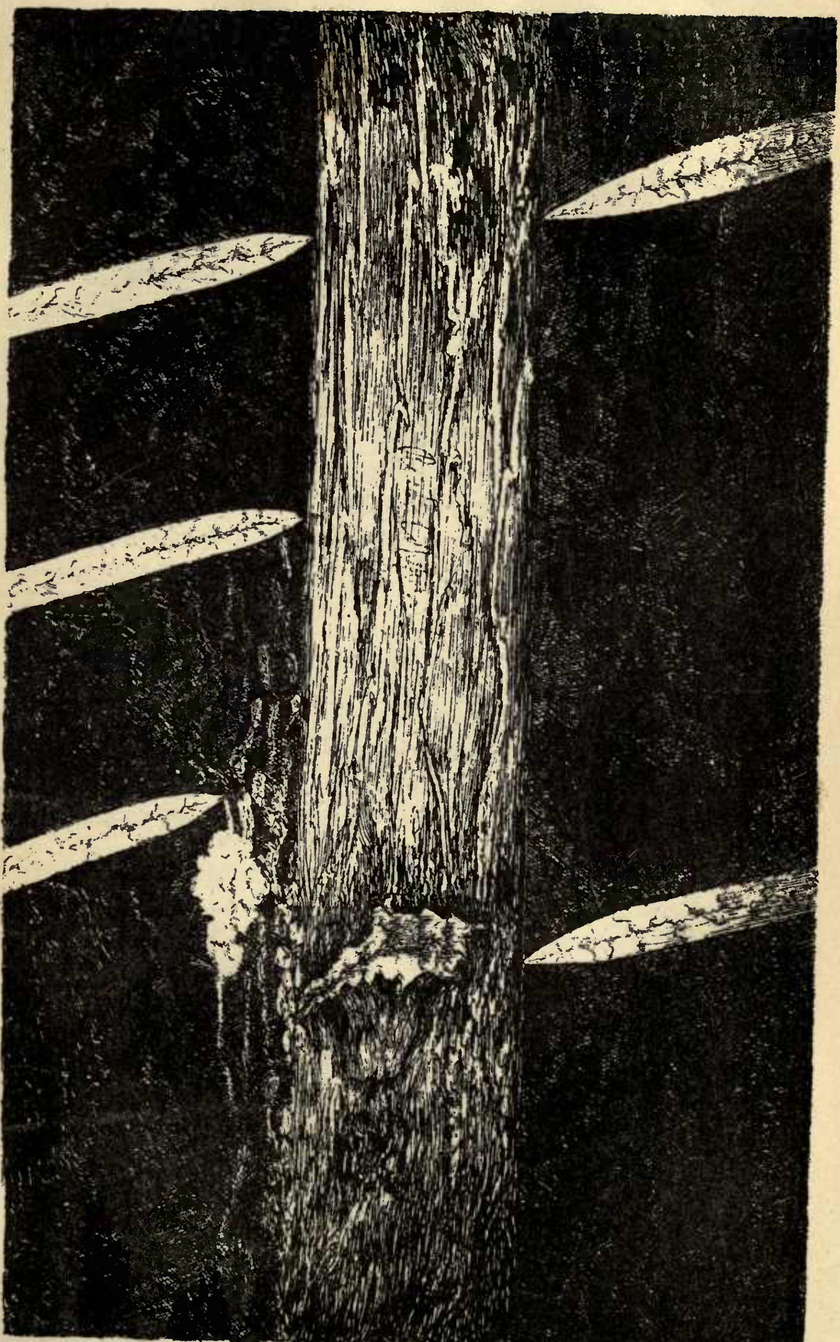
In the eastern stopes, the bed became rapidly poor to the east of a lode, which, beginning in the roof as a little thread of ore, not three inches in width, rapidly increases in size as it rises towards the surface, which it reaches as the Hall and Campbell lodes. Probably, however, between the bed and the surface the lodes will not be found to be very uniform in width. They will probably also be much broken into branches, as the slates between the bed and the surface are seemingly less compact and more disturbed than below the bed, and would, therefore, fissure less regularly.

The characteristic features of the bed have been often described, though a thorough investigation of the composition of the slates in the different parts is still a desideratum. But the facts above stated throw fresh light on its formation. There can be hardly a doubt that the Fanny Eliza is a true lode. It has not varied in direction or width for 40 fathoms ; its dip is as regular as its strike, and, at places, distinct friction-surfaces have been observed. It is almost as certain that the veins which take their rise in the roof of the bed are lodes—not lenticular masses, inasmuch as their origin corresponds exactly in position with lodes which crop out upon the surface. It is, therefore, more likely that the bed received its copper from the lodes than that the bed fed the lodes. All appearances go to prove that the fissures which, filled with mineral, now form the Fanny Eliza and other lodes, discharged their liquid contents into the bed, and that, after percolating through the slates, what was not precipitated between their layers reached the surface through other fissures. The difficulty of explaining why the fissures did not extend through the bed and reach the surface direct, might induce one to suppose the slates and the copper they contain were simultaneously formed. In that case we might suppose the copper to have been derived from the deep lodes and precipitated among the slates during their formation. Subsequently, there might have been a further formation of slates, the fissures in which became filled with mineral derived from the bed, in the same manner as the lodes below the bed may have derived their contents from sources at still greater depth. This would not so well account for the poverty of the bed to the east of the surface lode, in the eastern stope, as the other hypothesis ; for, had the surface lode derived its copper from the bed, there would have been impoverishment of the slates on both sides ; whereas, the impoverishment occurs only to the E., that is, on the side furthest from the deep lodes, as though the deep fissures had injected into the slates their contents, which, being relieved from pressure by filling the surface fissure, did not impregnate the slates to any great extent beyond this fissure. There are no intrusive rocks or faults, or other marks, to establish the relative ages of the surface and deep lodes; but the absolute uniformity in the direction of both their strike and dip would lead to the presumption that they were produced by the same disturbing force, and at the same time.

The experience gained at Harvey Hill should be of use in the exploration of other copper-beds along the same synclinal, so many of which correspond with it in their main features. At the present price of copper and cost of labor in Lower Canada, it is doubtful whether any of the copper-beds are rich enough to be mined with profit; but if they are all accompanied by lodes, in which the copper is concentrated instead of being distributed through 5 to 10 feet of slates (and the bed at Harvey Hill in places far exceeds 10 feet in thickness), many will be worked with profit. As at Harvey Hill, the vicinity of a lode will generally be detected by the increased richness of the slates, and the kind of ore hey carry.

If the two lower beds, known to exist on the Hill, extend at all beneath the uppermost, one would be anxious to know how they affect the deep lodes. The probability, however, is, that they are very limited in extent, as the second bed met with in Frémont's shaft was not cut in the adit, and that met with in the adit was not necessarily more extensive than a small bed of a few fathoms' extent close to surface to the west of Sayles' shaft, which divided its mineral from several veins cropping out through it.

Strictly speaking, therefore, these cuperiferous slates do not belong to beds at all, but should be classed as impregnations.



PAPER III.—ON "CANADIAN ARCHIVES."

BY HENRY H. MILES, D.C.L., LL.D.

(Read before the Society, Dec. 14th, 1870.)

I.—The subject of this evening's paper could hardly be expected to recommend itself, on the grounds of novelty or originality, to the attention of the members of the Literary and Historical Society; for the Society, in one form or another, has often had it under notice. Frequently, in the discussions which have taken place, the researches which have been prescribed to committees, and by the considerable expenditure incurred, it has manifested an anxious concern in relation to the foundations of our knowledge of the facts and events belonging to Canadian History. Some of the results, also considerable, are to be found in the published "Transactions."

But I here propose to present the subject from somewhat different points of view—not treading altogether on the old ground, and hoping to shew that there is still plenty of appropriate work for the Society to accomplish in the way of historical pioneering, and in the further prosecution of the legitimate objects of its mission.

II.—I shall first offer some preliminary observations on the subject of archives in general—taking this term to signify chiefly the records of facts and events which are of a more important and public character.

It would not be wholly irrelevant, if time and the occasion permitted, to speak at length of the various modes and processes to which mankind have in all ages had recourse for preserving the recollection of occurrences. We might advert to *oral tradition*, almost the sole method practiced among barbarians, and embracing, at more advanced stages of society, the public rehearsal of events on stated occasions to assemblies of men, in the shape of narratives in prose or song. But, though, to this day, so much of our knowledge of the past is allowed to be based upon tradition or mere *hearsay*, yet, for purposes demanding precise accuracy, and when great interests are at stake, we all know how often unreliable, indefinite, and even contradictory, is this sort of record, and that our confidence in it lessens with the lapse of time. I shall have occasion again to allude to such traditionary sources of knowledge further on.

Among the earlier inventions for recording facts, we might mention writing, or rather *engraving*, on the surface of various solid substances, such as stone tablets, tables of lead, copper, bronze, brass, wood, ivory, and thin sheets of wax. We read in Scripture of "the law of God written on tables of stone," and in Grecian and Roman History, of laws, orations and chronicles, engraved on plates of bronze and brass. Disraeli speaks of an Icelandic historian, who built a large wooden house, on the walls and spars of which "he scratched" the annals "of his own and more ancient times;" also, of another sage or hero, who thus had recourse to his chairs, benches, and bedstead, for the means of perpetuating the memory of his own exploits.

The Romans, however, found out, by experience, that the materials which were apparently the most durable in their nature were far from being the best adapted for the permanent preservation of records. Of this they had a signal proof. The code known as "The Laws of the Twelve Tables," were kept together with other chronicles engraved on brass in the capital. By a stroke of lightning they were instantaneously destroyed, some of the plates being melted, and the inscriptions on others rendered illegible. However, the use of thin tablets, composed of wood or prepared skins, and covered with wax, was very common amongst the Romans, and continued during a long period. Not only epistolary and literary compositions were committed to these more fragile receptacles, but what we should now call official documents, as also wills, were inscribed on them. The same kinds of tablets used to be employed in the Roman schools in the instruction of youth, each scholar having his own set of implements,—one of these being the *style*, a small cylindrical instrument of iron, sharpened at one end and flattened at the other for convenience in making erasures. It seems that the style, in the hands of an irritable or combative person, sometimes became a dangerous weapon, since a law was passed, on account of its too frequent employment as a dagger, forbidding the use of iron styles altogether; so that others made of bone, horn, reeds, and so forth, came to be substituted. We read, for instance, of a school-master, who appears to have goaded his disciples into active hostilities which had a tragical termination, for his scholars felled him with their tablets, and then massacred him with their styles.

Long after the times here alluded to, even in England, tablets and styles were in use. We read in old Chaucer's writings:

> " His fellow had a staff tipped with horne,
> " A paire of tables all of iverie,
> " And a Pointell polished fetouslie, (whatever this may be !)
> " And wrote alwaies the names, as he stood,
> " Of all folke that gave hem any good."

I shall only allude, in passing, to the transition of those comparatively cumbrous modes into others more convenient for use, and even more useful in point of durability. The Egyptians made use of the bark of a plant which grew on the banks of the Nile, called *papyrus*, while the Chinese made a kind of paper with silk. In the course of time, these substances, also the prepared bark of other plants, linen, skins of quadrupeds and serpents, fashioned into parchment, came into use ; and the processes of scratching or engraving on tablets gave place to the easier art of painting or writing with different coloured liquids or *inks*. Of such materials, and by such means, were composed the *manuscripts* before and during the middle ages, comprising literature, archives, and records, up to the time when the introduction of printing, and of our present papers and inks, caused the more ancient processes to be set aside for ever.

Even on the subject of ancient and modern papers and inks, it would be well, in connection with the topic before us, to go into some useful details, if circumstances permitted. The papers manufactured in the present day are undoubtedly superior to those made two or three hundred years ago. The well known writer *Fuller* quaintly says, complaining of the preference given to foreign manufactures: "We do not enough encourage the making of paper amongst us; but, considering the vast sums expended in our land for paper out of Italy, France and Germany, our *home-spun* paper might be found beneficial. Paper participates, in some sort, of the characters of the country which makes it,—the Venetian being neat, subtile and court-like; the French, light, slight and slender; the Dutch, thick, corpulent and gross, sucking up the ink with the sponginess thereof."

But whatever may be the relative merits of the papers used at different periods, the composition of our inks is inferior to that of our forefathers. Modern records, in this respect, do not compare favorably with those made many hundred years ago. Having had occasion, during the last few years, to inspect written documents, including some despatches prepared in England and sent out to this country, and other records or copies written in Canada within the last hundred years, I have been struck by the indistinctness of many. Some, not even forty years old, present a pale, faded appearance, owing undoubtedly to the use of poor ink. On the other hand, persons who have had an opportunity in London of inspecting some of the ancient Saxon manuscripts, and the rolls and records which have been preserved of the period from the year 400 to the 12th century, see that the written characters are bright and clear, and in the finest state of preservation; while, in this respect, there is a great falling-off in records belonging to the 15th, 16th and subsequent centuries. That ancient register of the lands of England, called the "Domes-day Book," prepared by the order of William the Conqueror, bears as the date of its completion, 1086. The first volume, a large folio of 382 pages, written in the same hand, in double column on each page, and the second, a quarto of 450 pages, single column, are both preserved to this day in their pristine freshness, fair and legible as when first written. Sir Francis Palgrave, formerly the Deputy-Keeper of Records, says of *Domes-day Book:* "In early times, precious as it was always deemed, "it occasionally travelled like other records, to distant parts. "Till 1496, it was usually kept with the King's Seal at "Westminster, with other valuable records, under three locks "and keys, in charge of the auditor, chamberlains, and "deputy-chamberlains of the Exchequer. In that year it "was deposited in the Chapter-House at Westminster, in a "vaulted porch never warmed by fire. From its first deposit "in the Treasury at Winchester, in the reign of the "Conqueror, it never felt or saw a fire; yet, every page is "bright, sound, and perfect."

It has been reasonably suggested that the less durable quality of modern inks, compared with those employed in writing the earlier records, is dependent on the neglect to use, in their composition, ingredients calculated to resist destruction by air and moisture. They are the same with respect to certain colouring matters and gum; but whereas modern inks have usually been made up with nut-galls, sulphate of iron, and gum, those more anciently used consisted chiefly of carbon, in the forms of soot and ivory-black—that is, of materials, under ordinary conditions, indestructible.

It would certainly be worth our while, if it were possible on this occasion, to advert to numerous other points connected with the various modes resorted to in times past for making up and preserving the records of memorable events. But, however minutely this were done, the inevitable conclusion would be that, as regards mere materials, paper and ink are, in almost every point of view, preferable to all others that have been ever employed or thought of—more generally convenient for use, cheaper, more easily set in order and preserved, more easily searched, consulted, and replaced. We must admit that a light fabric derived from linen rags, with written characters inscribed, is, substantially, of a far more perishable nature than stone, clay, metal, and several of the other materials anciently used, and still appropriately resorted to, for certain kinds of memorials. Yet, the facilities which have just been indicated, and, above all, the means of multiplying copies to any extent which we possess in the *Printing Press*, now place mankind in a position to guard, if they will, against all known sources of accident, decay, and destruction.

III.—I shall now *revert*, for a brief space, to tradition, or oral communication, including what has been commonly styled *hearsay*, of which I have already spoken as a peculiar sort of Archive or fundamental source of information. We sometimes meet with persons who, because they have figured as actors in past transactions, or because they have derived their cognizance of these, at second hand, as it were, from conversation with others who did personally participate, set at nought all such accounts as do not square with their own views. It depends, I need scarcely say, much upon the nature of the transactions themselves how far evidence of that kind can be received as reliable, even when we have to deal with persons of undoubted veracity, intelligence, and freedom from undue prejudice. We may accept it readily enough in cases where an isolated fact, or single series of facts, is concerned. But if the case be that of a battle, a rebellion, or a course of important events implying the occurrence of many distinct incidents and the co-operation of many different actors, the oral testimony of any *one* is really valuable only so far as it serves to assist in filling up a part of the outline embracing a narrative of all the facts. When the Duke of Wellington, shortly after the battle of Waterloo, was written to for information by a gentleman who stated his intention to write a complete history of that great conflict, he replied as follows: "The object which you propose to yourself is very "difficult of attainment. The history of a battle is not "unlike the history of a ball. Some individuals may "recollect the little events of which the great result is the "battle won or lost; but no individual can recollect the "order in which, or the exact moment at which, they "occurred, which makes all the difference as to their value "or importance. . . . . . ." The suggestion contained in this reply is obviously applicable in a great many cases of individual testimony of the sort now adverted to. One's own personal experience or participation in a series of events may aid in correcting misstatements on certain points; but, to be of substantial and permanent value, a written record should be made at the time of or soon after their occurrence. To delay making that record until, perhaps, years have elapsed, or to leave it for a future generation to supply, is to weaken the character of such evidence, and cause it to assume more or less that of mere rumour.

In offering these last observations, I have had in view more particularly the difficulties which must encompass any attempts at present to get at the correct history of events which have transpired in this country during the past fifty or sixty years, until at least all the available written and printed records are looked up, collected and arranged, and their evidence sifted, as well as weighed in conjunction with the conflicting testimony of eye-witnesses and participators still living or recently deceased. If, however, we limit our ideas of the nature of tradition as consisting of oral testimony transmitted from father to son, or from individuals of one generation to those of another, we have numerous instances in the history of Canada, as well as that of other countries, shewing its uncertain character when not supported by written records. Believing this to be a point of some moment in connection with our leading subject, I cite one or two examples.

We have a fair instance in English History of the account to which traditional evidence might have been turned if it were in all cases good for much. It is that of the Parr family. Thomas Parr was born in 1483, and lived till 1635, attaining to the prodigious age of 152 years. He had a son who died at 113, a grandson who lived to be 110, and a great-grandson who died on September 21st, 1757, aged 124 years. The period between the birth of Thomas Parr and the death of his great-grandson, Robert, comprehended the space of 274 years. But old Parr, when he was brought to London in 1635, to be presented to King Charles I., although then in good health, and in full possession of his mental faculties, seems to have had very little to impart respecting the events which had occurred in the course of his protracted life; nor are we informed that any of his long-lived descendants ever contributed anything to the existing stock of knowledge. Thomas, however, seems to have been quite uneducated and illiterate; and if the same were the case with his descendants down to Robert, the great-grandson, we might, perhaps, be allowed to infer that defective intelligence was a cause of the loss of so fair an opportunity of illustrating the nature and value of oral tradition. Nor do we find in Canadian History that the stock of knowledge was substantially increased by the aged Iroquois woman who is reported to have come on a visit to Quebec about the year 1742, when she was 138 years old. This venerable person is said to have afforded, by her visit, immense gratification to the inmates of the Ursuline convent, who beheld in her one who was of mature age when Champlain ruled in Canada, and who, they judged, must have received from eye-witnesses belonging to her own tribe accounts of the first arrival, of their foundress, Madame de la Peltrie, as well as of many other remarkable persons and incidents connected with the rise and growth of the Canadian Colony under the rule of no less than seventeen successive governors. It is reasonable to conclude that, considering she was a savage, and acquainted with all that was known of the past to her own people, she must have been an intelligent woman, and well able to make interesting disclosures. But if she did, these have not been placed on record.

Some time since, on the occasion of a visit to the General Hospital, I made use of an opportunity of conversing with one of the aged inmates of that institution. She appeared to be in possession of her mental faculties; and as she professed to remember incidents which occurred upwards of 80 years ago, I interrogated her on the subject of what have been styled "the dark days of Canada." One of these was Sunday, October 16th, 1785, and the two others the 2nd and 3rd of July, 1814. She said she recollected them, and that there had been an interval of about 30 years between the first and last. Finding her statement, so far, as correct as could be expected, I proceeded to question her further as to particulars. But I failed to elicit any other definite information, except the mention that she thought she was in fear on those occasions. Considering that the recorded phenomena of those dark days were remarkable enough to make a strong impression on the minds of the most ignorant persons, occasioning general alarm, and that the accompaniments of the first, such as the lighting-up of the churches and private houses in the day-time, might have been impressed on her memory, I was not prepared to find, as I did, that she recollected none of the particulars.

Quite of a different nature from the foregoing cases were those of the two well-known gentlemen named Thompson, father and son, of whom the latter, at an advanced age, died in Quebec last year. Mr. Thompson, senior, had been present with Gen. Wolf at the first battle of the Plains, in the year 1759; and from the time of the occupation of the city by the British troops, in the autumn of that year, had remained a resident of it until his death, in 1830. In 1776, when Montgomery fell in an attempt to capture the place by assault, he superintended the interment of that general's remains. Forty-two years later, when he was about eighty years old, and when the widow of Montgomery reclaimed those remains, he was able, in the most perfect manner, to recall to mind all the particulars necessary for identifying the place of burial and for superintending the disinterment. Numerous other particulars, to the point, might be mentioned; but as they are all very well known, there is no occasion for me to pass beyond an allusion to them. But I may be permitted to offer a comment. The circumstances of the case of Mr. Thompson shew what oral tradition might do for history if only the narrators proved to be persons of irreproachable integrity, good judgment, of cultivated minds, and active mental and bodily qualities, with the additional important advantage of having passed long lives amidst scenes calculated to perpetually freshen their memories and to remind them continually of even the minor incidents concerned.

In closing this portion of my subject, I cannot forbear referring to a somewhat remarkable instance of traditionary calumny and misapprehension being completely refuted by means of a recourse to official documentary evidence. At the siege of Quebec, in 1759, an officer named Montgomery was concerned in certain proceedings held to be, even in time of war, inexcusable, on account of their atrocity. As a consequence, his name and the memory of the man became odious. During a long period of time subsequently, it was generally supposed that Richard Montgomery, who fell, as has been stated already, at the assault of the city on the morning of January 1st, 1776, was that same officer. Nevertheless, that was not the universal conviction. A gentleman, resident in Upper Canada, addressed an application to the War-office in England, in order to ascertain, if possible, what regiments were serving in America in 1759, their stations, and whether a Capt. Richard Montgomery had been one of the officers among those on duty at Quebec. The result was a search among the Archives of the War-office, and, in due time, an official reply to the application that had been sent from Canada. This shewed that there were, in that year, two officers named Montgomery serving with their regiments in America, of whom the one named Richard Mongtomery belonged to a regiment then with General Amherst's forces at Lake Champlain. The other Montgomery—whether or not a brother of Richard, as some have supposed, is uncertain—was at the same time serving in one of the regiments under Wolfe, at Quebec. It was further stated, in the official reply, that the said Richard Montgomery, some years afterwards, while his regiment was still in America, but before the commencement of the revolutionary war in 1775, sold his commission and retired from the service. In short, the Richard Montgomery who thus retired from the British army, and who settled down in America, transferring his allegiance to the United States, and who afterwards perished at Quebec, in 1776, was not the man whose name and memory merited those odious imputations; but, under a misapprehension of the real facts, he had been mistaken for another officer whose sirname was the same as his. I think it right to mention that a copy of the letter intimating these facts was communicated to me by one of the vice-presidents, Mr. LeMoine, of whom I suspected at the time, and have done so ever since, that he had himself been mainly instrumental in thus rescuing the character of an innocent man from the odium so long resting upon his memory.

IV.—A complete collection of the Canadian Archives would embrace an enormous quantity of records now scattered in localities very distant from each other, and of which many, perhaps the most valuable, are not the property of the Province. To obtain access to them, it would be necessary to go to the capitals of several of the neighbouring States, especially to Albany, Boston, Philadelphia, and Washington. We should be obliged to go to Halifax, to the British Museum and depositories of Archives at London, and to Paris.

To the methods of dealing with the public records in some of those places, I shall have occasion to refer. As regards the documents themselves, however, their nature and contents, my observations will be confined as much as possible to Archives actually held in the Province and belonging to it. But, in truth, owing to various causes, and, amongst these, to the former migratory character of our Governments and Parliaments, and, partly, to the recent establishment of the Constitution of the Dominion, it is yet impossible to pronounce what we really have in the shape of Archives, or to point out precisely the localities in which they are lodged. Besides those to be found at the several existing seats of Government, there is a very considerable mass of them at Montreal, and, probably, some remaining at Kingston.

With respect to the Archives of the Colony, of periods antecedent to the year 1764, we may infer some particulars of their nature, and how they were disposed of, by consulting the Articles of Capitulation, dated Sept. 8th, 1760. In seven or eight of these, we find stipulations proposed by De Vaudreuil in behalf of what are concisely styled "papers." De Vaudreuil demands that those in his own possession and that of General de Lévis and Intendant Bigot, as also the Colonial Government papers and those belonging to the several public departments, shall be transported to France, without previous inspection by British officers, under any pretext whatever. In article 45, it is stipulated, on the contrary, that certain documents shall be suffered to remain behind in the offices where they had been customarily kept —these documents being the Registers and papers of the Supreme Council; those of the Provost and Marine Office at Quebec; those belonging to the Royal Jurisdictions of Three Rivers and Montreal; the Seigniorial papers; the Notarial Deeds lodged in the towns and villages; and, generally, all Records concerning the estates and property of individuals. Amherst grants the stipulation of article 45, in full. The other stipulations about the papers of De Vaudreuil and the chief officers he also agrees to, with two reservations—namely: 1st, that all Archives necessary for conducting the government of the country be excepted; and 2nd, that the Marquis de Vaudreuil and all officers, of whatever rank, hand over to the British authorities, in good faith, all plans and maps of the country.

From these particulars we may infer that a large number of Archives must have been removed from the colony to France on the departure of the last French governor with his officers and troops, in the autumn of 1760, but that a very large quantity must have remained behind. However important it might seem to obtain detailed information of all the ancient Records included in General Amherst's exceptions, it is matter of doubt whether any official or other person in this country is at present in a position to furnish it. But we cannot say the same of the Archives of the Supreme Council or some other public Records mentioned in No. 45 of the Articles of Capitulation. In the years 1854 and 1855, three valuable sets were printed and published at the public expense, consisting of the Royal Edicts and Ordinances concerning Canada from 1627 to 1756, the enactments of the Supreme Council since its establishment in 1663, and the Ordinances and Judgments of the Royal Intendants of Canada from 1663 to 1758. We have, besides, in printed form, probably all that the most zealous Archæologist would now care to study on the subject of the Seigniorial Tenure, a result for which I believe the public is indebted to the laborious researches and professional ability of the honorable gentleman who acted as counsel for the Seigneurs before the tribunal which adjudicated on their claims.

It would take us into too wearisome details to discuss further, or in any manner commensurate with its importance, the subject of the old Archives of Canada—that is, those which relate to its affairs prior to the capitulation in 1760. Most of the original documents left behind in the country in that year, are, I believe, in the custody of one of the Departments of State at Ottawa. I further believe that in the prosecution of its legitimate functions, this Society would do well to renew its inquiries into this matter, with a view to obtaining certain and complete information on all points appertaining to it.

Of the Canadian Archives relating to affairs of dates subsequent to that of the cession of the Colony to England, and extending to the epoch of Confederation, I consider it safe to say that they are in a position even less accessible than the Records of anterior periods. It is probable the ancient French public papers which may remain in the country would be found to be so far sorted and properly labelled as to require no very large amount of expense and labour in procuring catalogues of them. We cannot, however, say this of the later Archives. It has been already stated that a considerable mass of them is lodged at Montreal—some, but I believe no considerable portion of the whole, being sorted, put in bundles, and labelled, though there is reason for doubting whether the terms of endorsation on each packet are suitable for all the papers within. Those which are sorted and labelled bear dates beginning with the year 1764. In some of the upper shelves and partitions, bundles of documents and loose papers are to be seen unsorted; and it is impossible, without examination, to pronounce upon the nature of their contents, or whether, as regards their dates, they correspond with the labelled documents nearest to them. In other receptacles and places, on shelves, tables, and in large boxes or cases, are multitudes of documents, papers, engrossed sheets, petitions, addresses, printed leaves and books, and some bound volumes of manuscript. An inspection of some of these latter gives the impression that their statistical and other contents are of considerable value, and that they are well worthy of being catalogued, with a summary of their nature, if not to be printed in full. What the contents of several large cases may be must remain matter of conjecture until they are opened, and the documents within examined and sorted. On taking up a loose sheet in the upper part of an open case, it was seen to be an engrossed copy of an address, prepared, I believe, at Three Rivers, in the year 1787. In the same case were many other papers, some in the form of rolls, others written on foolscap, which from their appearance were judged to appertain to a variety of subjects and dates. The whole of the matters which I have thus summarily adverted to are contained in vaults underneath the old Government House at Montreal. I was informed by the worthy keeper, Mr. David Luck,—who has been in attendance there upon Governors and Cabinet Ministers, and in charge of Records, since the days of Sir George Prevost, and who, I was gratified to learn, has just been handsomely pensioned off by the Dominion Government,—that the vaults were usually musty and damp, and scarcely safe for the purposes of search, without the use of a stove. I gathered, in fact, from his remarks, that at least two persons had accelerated their premature decease by too assiduously prosecuting there the work of searching for documents and sorting old papers. Considering the risks of fire, and the probability of an irreparable loss, which the members of this Society are well able to appreciate, the circumstances I have mentioned will not seem to be unworthy of their notice. Upon the whole, and in the interest of literature and the history of our country, as well as for other reasons not necessary to be stated on this occasion, I cannot forbear expressing my conviction of the advantages that would be secured if it should be found practicable to turn to account the organization of the Society in regard to these Archives.

V.—I had intended to close my present paper with some remarks which I thought might prove indirectly useful in our own case, or, at least, not likely to prove unacceptable, in relation to modes of dealing with Archives elsewhere; but the length to which the foregoing have extended reminds me that I must now do this far more briefly than I could desire if time permitted.

(1.)—The regular fyling away of official documents received and of copies of official correspondence, as practised in all our public departments, followed by the publication of annual reports, leads to the rapid accumulation of public records, of the nature of Archives. These, together with the Bills, Acts, and Returns to Parliamentary Addresses, amount, in the course of every few years, to an unmanageable mass of documents, unless there be at the same time a convenient system providing for their safe custody, and facilities of access to them for search and for future reference.

(2.)—I have understood that the means of attaining these objects in France are as perfect as they could be expected under a *quasi*-despotic form of government. This Society has already profited by those opportunities, so as to find and obtain copies of many valuable papers amongst the French Archives relating to the early History of Canada. Not being sufficiently familiar with the details, I will not occupy time with further allusion to the French system.

(3.)—In England, the Public Records were formerly dispersed in upwards of sixty different places. Within a few years past, a vast building has been erected in London for the reception of them all. It contains more than two hundred distinct apartments, affording space for more than half a million cubic feet of documents, and accommodation not merely for existing records, but also for all that are expected to accrue in the course of the next half-century. The building is fire-proof throughout, and the whole under the charge of an official styled " Master of the Rolls." He receives from the various Departments of State, the Parliament, Courts of Common Law, of Chancery, the Admiralty, and many others, Records above twenty years old. All are catalogued for convenience of reference, and any person may make a search and copy extracts on payment of a small fee; but a *boná-fide literary* inquirer can obtain searches and copies of documents in pencil without any charge, provided he can satisfy the deputy-keeper that his purpose is really of a literary nature. The extent to which this privilege is appreciated by literary persons is wonderful, it being not uncommon for a single individual to consult four or five thousand documents within one year. Such is the excellence of the arrangements, that only a very few minutes elapse before an applicant's demand is complied with, whatever be the nature and date of the document required.

There is also in London a distinct establishment for preserving Wills, called Doctors' Commons. The original wills are required to be deposited here before they can be legally administered to by executors. These date from the year 1483 down to the present time; but there are copies of still older instruments beginning with 1383. Any person, for a small fee, may procure the perusal of a will, the search for it being completed at half an hour's notice—usually wlthin a few minutes. A longer notice is necessary when a copy is required. In a year, the number of searches approaches to 30,000, and applications for copies and extracts to nearly 10,000 more. The structure is fire-proof, and the arrangements such as always to secure perfect copies.

The facts here stated will suffice to shew that the public records in England are made strictly public property, and that most efficient systems have been adopted for securing safe custody as well as all necessary facilities for search and reference. Yet, an authority already cited says: "The Records of this country have no equal in the civilized world, in antiquity, continuity, variety, extent, or amplitude of facts and details. From *Domes-day* they contain the whole materials for our history—civil, religious, political, social, moral or material, from the Norman conquest to the present day."

(4.)—In the United States, the public records of the several States of the Union are placed in charge of the State Librarians, who are liberally compensated. The documents, as they accumulate from year to year, are suitably numbered and placed, so as to be convenient for future access and reference. A catalogue of them is printed annually. Any person, on application, can obtain access to them, whether for perusal or copying. There is no charge for making a search. In the separate States there are no distinct collections of departmental Archives, for the public documents of every department are handed over to the custody of the State Librarians. In Washington, each department keeps its own records, while those appertaining to the whole United States are placed in the custody of officials acting under the authority of the President himself. The arrangements for security and for convenient reference are stated to be of a very perfect nature; but no national document relating to the whole of the States can be procured for the purpose of perusal or copying without the President's order.

(5.)—In Nova Scotia, action was taken in 1857, with a view to ascertaining the nature and contents of the Archives of that Province. The Hon. Jos. Howe moved for an address to the Governor, "to cause the ancient records and "documents illustrative of the history and progress of society "in the Province to be examined, preserved and arranged, "for reference or publication, as the Legislature might "determine, and that the House would provide for the "same." In 1858 and the following year, further steps were taken to procure from England and from Canada copies of any despatches that might be needed for completing the Nova Scotian fyles. In the course of subsequent years, more than 200 volumes of manuscripts were selected, arranged, catalogued, and bound.

The next step was to authorize the preparation and publication of a volume containing selections of such of the Archives as should be deemed to possess the greatest historical value. Last year, under the auspices of the Commissioner of the Nova Scotian Public Records, the volume, consisting of 755 pages, was brought out.

The work is of a truly interesting character. Its contents cover the period from 1714 to 1760, divided into five principal portions, with an elaborate index. I will not undertake to describe it; nor would this be necessary, for, through the good offices of the President of this Society, who, I understand, is an intimate friend of the compiler of the work, members are enabled to judge for themselves, since copies of it are to be found on the shelves of the Library.

It only remains for me to crave indulgence for the imperfections of this paper, which, owing to unavoidable circumstances, was prepared with more haste than the importance of its subject would appear to warrant.

PAPER IV.—EDUCATION—PRACTICAL AND NATIONAL.

BY THE REVEREND J. H. JOHNSON, M. A.

(Read before the Society, Feb. 15th, 1871.)

As a Canadian, I desire to see a nationality for Canada. I would have all who reside here, intending to make this their home, as well as all who, like myself, have had their birth on Canadian soil, remember that Canada is even now a *country;* that she has in her bosom all the elements of future greatness; and if her sons and her daughters fully realize their position, and prove true to the indications of Providence, she may not only stand high amongst the nations, but she may yet become the founder of empires, and give laws to other countries. By a Canadian education, I mean an education adapted to the circumstances and wants of the people of Canada, an education which will fit young people to discharge those duties, and assume those responsibilities, which sooner or later must devolve upon them as the citizens of a new and growing country. While great attention should be paid to the classics and the natural sciences, as well as the higher mathematics, by those whose pursuits will require attainment in these departments of study, there should be a universal regard to those branches of knowledge that are considered inferior, but which qualify the majority for the practical business of their lives. Besides this, education should be ornamental as well as solid. A writer said in *The Spectator*, more than a century ago:— "The general mistake among us in educating our children is, that in our daughters, we take care of their persons, and neglect their minds; in our sons, we are so intent upon adorning their minds, that we wholly neglect their bodies. It is from this that you shall see a young lady celebrated and admired in all the assemblies about town, when her elder brother is afraid to come into a room. From this ill-management it arises, that we frequently observe a man's life is half spent, before he is taken notice of, and a woman in the prime of her years is out of fashion and neglected. The true art in this case is, to make the mind and body improve together."

Education commences in a very early period of life. Man is possessed of faculties, by the development of which, he takes his place in the highest scale of created beings, and finds himself surrounded by objects, and in the midst of scenes adapted to the growth of these faculties. Every influence brought to bear upon him, will tend to educate either the good or the bad principles of his nature. So that, both intellectually and morally, he is undergoing a process of development. Especially is this the case with youth.

> "'Tis education forms the common mind;
> Just as the twig is bent, the tree's inclined."

The word "*educate*" is thus defined by an eminent lexicographer: "To bring up as a child; to instruct; to inform and enlighten the understanding; to instill into the mind principles of arts, science, morals, religion, and behaviour." But a reference to the original may give its meaning more fully. The Latin "*educo*," from "*duco*," I lead, and "*e*," "out of," when applied to a human being, signifies the *drawing out* of his faculties. The illustration of Addison has always been admired. He compares a human soul without education to a statue in a block of marble. The statue exists in the marble, and the sculptor only finds it. So education removes the rubbish, and the man appears.

The subject of education naturally divides itself into three branches—*physical*, *intellectual*, and *moral*.

First, then, education should be *physical*. This relates to the inferior part of our nature; but it has strong claims upon our attention. The mind is necessarily affected by the condition of the body. It acts through the physical organs. If these be disordered, the powers of the soul will be obstructed in their operations. All people, the young especially, should exercise freely, and at stated periods, in the open air. Close confinement has involved many in physical debility, and left them to drag out a life-time of suffering. Some of the most eminent physiologists and enlightened educators, have turned their attention to this subject, and fearful is the picture of woe they have presented to the public. Every institution of learning, from the elementary school up to the university, should have its ample play-grounds, with proper facilities for physical exercise. The hours, both of study and recreation, should then be so arranged, as not to infringe upon those portions of time essential to the preservation of the health of students. There should be a suitable proportion between the development of the physical, and that of the intellectual faculties. If this proportion be destroyed, both natures will suffer. Many have fallen through an incessant application to study, whom a moderate attention to gymnastic exercises might have preserved for extensive usefulness. The laws of nature cannot be violated with impunity. Here every transgressor must pay the penalty. Those who are too ambitious to ascend the hill of science, and are desirous of employing every moment of their time, may be compelled by their impatience and indiscretion, to make a long halt by the way, suspending their energies, and often failing to realize their hopes. And many, even after attaining to eminence in letters, have so abused their physical nature by the process, that they have not been able to use the knowledge they had acquired.

We come now to the *intellectual* branch of education. The importance of this cannot be over-estimated. "The intellectual powers are those by which man acquires the knowledge of facts, observes their connexions, and traces the conclusions which arise out of them." Much might be said on this interesting subject; but I shall only speak of education, as calculated to discipline the mind and fit a man for usefulness in life. In order to this, a judicious selection of studies should be made by each student, and pursued in that connexion which will tend to develope all the faculties of the mind alike. There is in most minds a predilection for some particular study, or a preference for those pursuits which will serve to call into exercise some special faculty, to the neglect of the rest. This is commonly observed in the industrial pursuits, where it appears to be perfectly in place; but every student should guard against its indulgence in a system of education. Not that any young person should be prevented from fitting himself for that business in life which his inclination leads him to pursue, and which his parents or guardians may have selected for him, by giving more immediate attention to those branches of science required for such avocation; but in order to preserve a well-balanced mind, the study of those branches which call out and give vigor to various faculties, is an indispensable requisite.

Remember also, that *thoroughness* is essential to a good intellectual education. In fact, there can be no mental discipline, or real improvement, without it. Whatever is attempted, should be accomplished, and nothing is learned until it is understood. The system of committing to memory, without digesting the writings of an author, so prevalent in our day, cannot be called education.

We must bear in mind also, that it is not possible to acquire a knowledge of every thing, whatever may be a man's intellectual powers, and whatever his facilities for improving them. That profound scholar, Boyle, tells us of a certain mineral that a man may occupy his whole life in studying, without arriving at a knowledge of all its qualities. And the truth is, "there is not a single science, or any branch of it, that might not furnish a man with business for life, though life were much longer than it is." No man, then, should suffer himself to be inflated with the idea that he has become a scholar or a learned man, because he has attended school, or spent a few months in the pursuit of any science.

> " A little learning is a dangerous thing—
> Drink deep, or taste not the Pierian spring.
> There shallow draughts intoxicate the brain ;
> But drinking largely sobers us again."

The more extensive our attainments, the more deeply we shall be impressed with our lack of knowledge. The great Sir Isaac Newton, after all his researches, and all his attainments, compared himself, in point of knowledge, with a man who had approached the ocean, and gathered a few pebbles upon its shore, while the mighty deep, with its teeming millions of inhabitants, its inexhaustible treasures, and its innumerable islands of verdure and beauty, lay unexplored before him.

Lord Bacon said: "Knowledge is power." And it is certainly knowledge that rules the world. Nor is it too much to say, that, in a new country like ours, where there are so many openings to the aspirations of youth, success will materially depend on the zeal and energy with which they devote themselves to study, and the supply of those intellectual treasures which they shall lay up for future use. On some of the personal advantages of an education to those who are so fortunate as to acquire it, the following remarks are from one of the best writers in the English language :— "The hours of a wise man are lengthened by his ideas, as those of a fool are by his passions. The time of the latter is long, because he does not know what to do with it ; so is that of the former, because he distinguishes every moment of it with useful or amusing thoughts ; or, in other words, because the one is always wishing it away, and the other always enjoying it. How different is the view of past life, in the man who is grown old in knowledge and wisdom, from that of him who is grown old in ignorance and folly ! The latter is like the owner of a barren country, that fills his eye with the prospect of naked hills and plains, which produce nothing either profitable or ornamental; the former beholds a beautiful and spacious landscape divided into delightful gardens, green meadows, fruitful fields, and can scarce cast his eye on a single spot of his possessions that is not covered with some beautiful plant or flower."

But in addition to the physical and intellectual, we must mention *moral* education. Unless based on sound moral principles, the two former will prove a curse rather than a blessing to society, and cannot much further the real interests of those that have acquired them. This sentiment cannot be too firmly impressed upon the mind. Young people, and after them, those of mature years, are too apt to be dazzled by appearances. But the intellectually great are not always to be admired. There is great force in the following lines from Pope:

"If parts allure thee, think how Bacon shined—
The wisest, brightest, meanest of mankind;
Or, ravish'd with the whistling of a name,
See Cromwell damn'd to everlasting fame!
If all, united, thy ambition call,
From ancient story, learn to scorn them all."
* * * * * * * *
In each how guilt and greatness equal ran,
And all that rais'd the hero, sunk the man!
* * * * * * * *
The whole amount of their enormous fame,
A tale that blends their sorrow with their shame."

Man has an elevated nature. He is a moral being. In this department we reckon the desires, the affections, self-love, the will, conscience, and the moral relation of man towards the Deity. Every system of education must be considered defective which omits the proper cultivation of these principles. On this analysis of man as a moral being, much might be said. It would be easy to show the necessity of controlling the desires, of placing the affections upon suitable objects, of confining self-love within reasonable bounds, of regulating the will by correct principles, and of listening to the admonitions of an enlightened conscience. These are all involved in a sound system of moral education. And to these must be added man's relation to his Maker. Indeed, on his attention to this particular will materially depend the advantage to which his intellectual attainments may be applied. The late Dr. Thomas Arnold, of Rugby, who was one of the most successful teachers of modern times, kept prominently before his pupils the great fact of their responsibility to God. His biographer says of him, that "he did not attempt merely to give theological instruction, or to introduce sacred words into school admonitions: his design arose out of the very nature of his office; the relation of an instructor to his pupils was to him, like all other relations of human life, only in a healthy state, when subordinate to their common relation to God. The idea of a Christian school was to him the natural result of the very idea of a school in itself. The intellectual training was not for a moment underrated, and the machinery of the school was left to have its own way. But he looked on the whole as bearing on the advancement of the one end of all instruction and education; the boys were still treated as school boys, but as school boys who must grow up to be Christian men; whose age did not prevent their faults from being sins, or their excellencies from being noble and Christian virtues; whose situation did not of itself make the application of Christian principles to their daily lives an impracticable vision." The eloquent and erudite Dr. Harris has very forcibly presented the value of revealed truth in awakening the energies of the human mind, and calling into exercise all its faculties in the acquisition of knowledge. He says:—"Let the Gospel obtain admission into the mind, and from that moment the most torpid specimen of humanity is quickened into a new mental as well as moral life. Even the mind which was previously alive and vigorous, becomes conscious of a new impulse to activity, and of a new sphere in which to spend it. In finding a

God, man finds the centre of all things, and henceforth the tendency of his mind is ever to harmonize the discordant, to arrange the displaced, and to assign to everything its right position in the great circle which surrounds the Deity. In finding 'the truth,' he finds an infallible standard by which everything is to be tested ; henceforth he would fain try every pretension, weigh every claim, by its relation to this standard, and estimate everything accordingly. Unless, therefore, you do violence to the mind, and repress its activity, moral education to some extent becomes a necessity."

"The man who lives under an habitual sense of his moral responsibilities," says Addison, "no sooner steps aside from the busy scenes of life, than his heart burns with devotion, swells with hope, and triumphs in the consciousness of that presence which everywhere surrounds him ; or, on the contrary, pours out its fears, its sorrows, its apprehensions, to the Great Supporter of his existence."

By the great principle of religion, do not understand that I recommend any system of denominationalism. True religion rises far above the region of party, and ignoring sects and contentions, teaches the truths of God, points out human duty, and breathes good-will to man. Passing by, therefore, the distinctive peculiarities of any and all religious communities, I maintain that the great fundamental doctrines of Christianity, held by all, should be assiduously instilled into the minds of the young.

Let me add to these three departments of education, a few observations on the importance of a proper cultivation of the manners. A certain amount of politeness in their intercourse with others, of whatever rank or position in society, should characterize all persons. By politeness, I do not mean the vain pageantry of the conceited coxcomb, or the supercilious deportment of the haughty aristocrat, but that essential ingredient in all good breeding which leads us to pay a proper deference to the opinions of others, and to treat the persons and presence of all with that consideration due to their respective positions in society; a course of conduct equally removed from vanity on the one hand, and from coarseness and vulgarity on the other. No one who has not duly considered this subject, can fully appreciate its importance. Lord Chesterfield and others, who have written so much on the value of good manners, have rendered an essential service to society. Many persons of a high order of natural abilities, by coarseness of manners have rendered themselves obnoxious to refined society, and thus presented an insuperable barrier to their usefulness, and often to their success. Like the *erinaceous quadruped*, they cannot be approached from any direction without throwing at the unlucky but innocent one who approaches them the pointed missives of their own disagreeable natures. Men of good taste will avoid such, as they will the pestilence or a beast of prey.

The above is a mere outline of the education which ought to be not only general, but universal. Now, I hold that it is the prerogative of the constituted authorities to afford all reasonable facilities for the education of the people, not merely for a section or class, but for the whole. The government of a country exists for the protection of a country, and to promote the welfare of its inhabitants. The want of education is a serious drawback to the prosperity and happiness of a people, while its possession must be the means of material improvement and of comfort. The condition of the uneducated classes has been graphically described by Dr. Foster in his excellent Essay on the Evils of Popular Ignorance.

"Imagine," says he, "a week, month, or year of the intercourse of the members of a family destitute of mental culture, the course of talk, the mutual manners, and the progress of mind and character; where there is a sense of drudgery approaching to that of slavery, in the unrelenting necessity of labor, where there is none of the interest of imparting knowledge or receiving it, or of reciprocating knowledge that has been imparted and received; where there is not an acre, if we might so express it, of intellectual space around them, clear of the thick universal fog of ignorance, where especially the luminaries of the spiritual heaven, the attributes of the Almighty, the grand phenomenon of redeeming mediation, the solemn realities of a future state and another world, are totally obscured in that shade; where the conscience and the discriminations of duty are dull and indistinct, from the youngest to the oldest; where there is no genuine respect felt or shown on the one side, nor affection unmixed with vulgar petulance and harshness on the other; and where a mutual coarseness of manners has the effect, without their being aware of it as a cause, of debasing their worth in one another's esteem all around. Home has but little to please the young members of such a family, while the elder ones have little enjoyment in their society. So little is the feeling of a peaceful cordiality created among them by their seeing one another all within the habitation, that, not unfrequently the passer-by may learn the fact of their collective number being there, from the sound of a low strife of mingled voices, some of them betraying youth replying in anger or contempt, to maturity or age. It is melancholy to see how early this liberty is boldly taken. As the children perceive nothing in the *minds* of their parents that should awe them into deference, the most important difference left between them is that of physical strength."

This is a dark picture; but it is not overdrawn. Ample materials for the composition of it may be found in this Province, in many places, and in this city. Ignorance has stamped her deformed image upon many families, and among them some afford scenes similar to those above described. Who can travel through some of the rural parts of this country, and especially pass through some of the inferior streets of our city, and not have his eyes and ears pained with the evidences of social wretchedness that meet him? I refer not to the wretchedness arising from a want of pecuniary resources. This is abundant, no doubt; but from a paucity of intellectual gratifications—for mental poverty is the most despicable of all pauperism.

Now, I repeat that it is the duty of the State, as the protector of the people, to make provision for their education. Certainly, to furnish all with the means of obtaining a good elementary education, and to encourage and foster institutions for higher education where individual efforts may originate them. This proposition appears to me so obvious, that it requires no discussion. It is not only founded in reason, but the experience of all countries shows that neither voluntary effort nor religious association can render education universal, or even general; and that governmental interference is indispensable, alike to secure universality and uniformity. In our country the principle is admitted, and the annual legislative appropriations for educational purposes testify to the great prominence given this subject.

But after all the efforts made in this Province, now for nearly a generation, I apprehend that two facts must strike every careful observer, as indisputable, viz.: 1st, that a limited number of children attend school at all; and 2nd, that the education imparted is not, generally speaking, of that thorough or that comprehensive character which should distinguish a national system of education. The answer to this two-fold objection may seem to be very easy. To make a system comprehensive, provide an ample curriculum or course of study, and to ensure thoroughness, secure the best text-books and the most competent teachers. But how are these to be obtained? and how shall we make sure that ample school accommodation, with maps and apparatus, will be provided?—and then, most difficult of all, that the whole school population of the country can be got to attend? These are the questions to be answered; and when the difficulties they suggest have been surmounted, all the advantages of a sound national education will inevitably follow.

First of all, I maintain that a national system of education should be free from sectarianism. Where children belong to parents of a different religious belief, it is manifestly inconsistent to teach either one or several religious creeds in our public schools. This inconsistency has been recognized, and the difficulty attempted to be met by the establishment of separate or dissentient schools for the minority. Such provision is doubtless a relief for the minority, and becomes an actual necessity, where the public schools are conducted upon a denominational principle. But why should they be? Is it necessary to interweave the catechism with reading, writing, geography, and arithmetic? Can neither grammar, algebra, nor geometry be safely learned, except through a sectarian medium? I can understand, that, both in school and elsewhere, moral and religious principles should be recognized and inculcated; but I do not see that any religious opinions should require to be inculcated in connexion with purely secular branches, any more than that they should be taught in our counting-rooms, or our manufactories, or our machine-shops, or even in the places set apart for our most menial labour. Why not leave the teaching of peculiar religious tenets to the parents and the church, to be carried out in the family circle and the Sabbath-School, or any other place belonging to the parents or the religious community? I would like to see our common schools attended by all classes alike; while protected by a wholesome moral influence, all the children of the land, together in their several localities, acquiring an education in those branches of science which will fit them for usefulness and enjoyment. And if parents and religious teachers do their duty, I cannot understand how the religious principles of children should be compromised by this course, or suffer from the absence of sectarian teaching at the public schools.

Having secured the establishment of our public schools on a broad and liberal basis, I would render them free to all the children of school-going age in the community. Rate-bills should be abolished, and no man's expenses for maintaining the cause of elementary education in the country should be increased by reason of his availing himself of the advantages of such an education for his children. On the contrary, this should be his and their *right*. How, then, should public schools be supported? I answer, partly by an appropriation from the revenues of the country, and the balance by a direct tax upon the rateable property of the school district.

To this it may be objected, that the Legislature, in setting apart a certain fund for Common School purposes, and allowing the imposition of a tax in localities to a limited amount, ought to go no further; and it may be thought unjust to compel any man to assist in gratuitously educating his neighbour's children. I reply, this argument, if it proves anything, proves too much. It is either just to provide for *all* the expenses of public schools by taxation, or it is not just to provide for *any* of them by such means. If it is right to take *a cent* for this object, it is equally right to take *a dollar*, or as much as may be necessary to accomplish the purpose.

I employ the term "taxation" as applicable alike to what is called "government allowance" and what is raised from the people by an assessment upon their property. The revenues of any free country belong to the people of that country. True, an appropriation from these revenues is not so immediately felt as that raised by direct taxation. For this reason, I would be glad if, by economy in the administration of public affairs, by a retrenchment of other expenditures, and by any reasonable increase in the public revenues, enough could be afforded to establish a free school in every school district in the Province. But if this cannot be done, let the deficiency be made up by a direct tax upon property.

Even in a pecuniary point of view, the wealthy would find the free school system advantageous to themselves. Is not any kind of property enhanced in value by being situated in the midst of an intelligent, virtuous people? Is not real estate, as well as personal property, thus rendered more secure? Is not greater stability thereby given to our civil and social institutions? Are not the expenses of the administration of justice thereby greatly diminished? Who are they that crowd our prisons and our Penitentiary, that multiply the number of our lawyers, bailiffs, constables, jailors, judges, and sheriffs? Are they not usually those who have been brought up in ignorance of all that refines and ennobles the human mind? who have been educated in vice, because virtue had not been presented to them, and the activity of their minds required some outlet? The following remarks, from the speech of the chairman of a public meeting held in Manchester, England, are pertinent to my argument:—"I maintain, gentlemen, that the ratio of crime is directly inversely proportioned to the amount of education. It may be argued that people in superior circumstances, generally have a superior education, and are not exposed to the same temptations that those occupying a lower class are. I grant that to some extent this is true; but not by any means to the extent they go, when they seek to draw any important conclusions from it. From the returns I have given you, it will be seen that only one out of 150,000 of the population has been committed for crimes. I could show you, that out of 8,000,000 of adult females in this country, a whole year has passed without a single educated female being committed for trial for any offence whatever. But there are in London, as you well know, a number of well-educated—I'll call them gentlemen, or educated men, if you please—who have to struggle day by day, and hour by hour, against an amount of privation which, in my humble judgment, few people in this part of the country understand. You shall take your actors, your authors, your artists, your men connected with various learned professions, your teachers, your decayed females, and others, of whom the mass in London is enormous, and I will show you that in one year, whilst there were fifteen hundred uneducated people committed to prison in Lancashire, in the county of Middlesex, in which London is situated, not one educated person was committed to prison for any offence whatever."

Doubtless, correct statistics in the Province of Quebec, would support the same theory. What an amount of crime, and consequent misery to society, might be saved, by teaching youth some mode of employing their time profitably, impressing upon them noble principles of thought and action, developing their powers, intellectual and physical, and directing them into proper channels! We have a House of Correction for juvenile offenders. Would it not be well to have, not one house for the whole Province, but one for every section, in the shape of a free school, to prevent juveniles from *offending*? The reformation of criminals is acknowledged to be a difficult, and in many instances, a hopeless task. But here is a plan to control the stream, by beginning at the fountain. Without, however, claiming every thing for education, we can safely assign it an important position in forming the human character upon a correct basis.

But it may be said, that, after all the facilities proposed are provided, multitudes of the lower classes are too indigent to furnish their children with books and clothes ; or they so little value an education, that they will not afford them the necessary time to attend school. For the former I would make a special provision, similar to the arrangement in the English ragged schools, the pupils being furnished with suitable garments and books, not to be removed from the school room. And in the latter case, I would make it obligatory upon the parent to send his children to school.

In short, I warmly recommend the compulsory system of education, and have done so since 1850, when I advocated it at a Convention in Upper Canada. I propose to abolish all rate-bills, and introduce the free school system in all its departments. In addition to this, I would fine the parent or guardian of each child, between 5 and 16 years of age, who is not attending some school, private or public, or being otherwise properly educated; and if *fining* did not answer the purpose, I would *confine* the parent or guardian, for a limited period, with a view to secure the facility of education to the child. I believe no School Law can be complete without such a provision. In the case of a breach of the peace, under our laws, the person offending, if found guilty, is compelled to pay a fine, or undergo imprisonment, often at hard labor, for a stated period, according to the nature of the offence. In the plan which I propose, there is a more visible connexion between the crime and its punishment. In both cases the penalty carries with it a recognition of the principle, that every individual who inflicts an injury upon the community, shall repair the damage to the extent of his ability. But how slight an offence is his who assaults his fellow creature, compared with that of the man who helps to surround him with an ignorant, degraded society? Do we not need protection from such inhuman citizens? Does not ignorance occasion violence, theft, intemperance, robbery, and even murder? Many a man has been a pest to society, and ended his days on the gallows, whom the benign influences of a common school education might have made an ornament to his race. I grant, indeed, that there are melancholy instances of acquired abilities perverted, of even a Christian education becoming worse than useless, for man is naturally depraved, and only his Maker can constitute him anew; but such a system of education as I suggest, will do much to turn his energies into the proper channel, and keep him from mischief.

Imagine not that I attach too much importance to the education of the young. It is not easy to over-estimate it. Why has the Creator endowed us with faculties whose development marks our character, and points us out as a blessing or a scourge to our fellows? Why has he decreed that knowledge shall expand the mind and exalt those faculties, while it refines the taste of pleasure, and opens up numerous sources of intellectual enjoyment? Why has he ordained that, in the intervals of physical repose (which all manual laborers absolutely require), the cultivation of the mental powers is not only conducive, but essential to health? "The Author of Nature," says the eloquent Robert Hall, "has wisely annexed a pleasure to the exercise of our active powers, especially to the pursuit of truth, which, if it be in some instances less intense, is far more durable than the gratifications of sense, and is on that account, to say nothing of its other properties, incomparably more valuable. It may be repeated without satiety, and pleases afresh at every reflection upon it. These are self-created satisfactions, always within our reach, not dependent upon events, and not requiring a peculiar combination of circumstances to produce or maintain them. Let the mind but retain its proper functions, and they spring up spontaneously, unsolicited, unborrowed, and unbought."

Entertaining such sentiments, I consider it the duty of all classes and all parties to combine, and provide such a system of national education, as shall necessarily embrace the entire community. I advocate the free school system, as calculated to effect this object, while at the same time it is just in principle. To the rate-bill I have two serious objections: 1st, that it has kept many of the poor class of children, as well as those of some selfish parents, not of the poor class, from school altogether; and 2ndly, that it makes the teacher servilely dependent on the patrons of the school. By the former objection, some of the most promising children have been practically excluded from our public schools. Their parents struggling under the oppressions of poverty, have found that, in addition to the clothing of a large family, they could ill spare the means to pay even the moderate tuition fees demanded for their education. However anxious they may be to afford their offspring the facilities for mental improvement, their limited resources have put it out of their power to do so. Nor does it furnish a satisfactory answer to this objection, to say that the commissioners are authorized to send indigent children to school, making their instruction a charge upon the property-holding inhabitants of the school-district ; for, with their utmost vigilance, commissioners, or trustees, may be deceived as to the resources of parents in some instances, and overlook them in others; besides, the honorable pride of many of the industrious poor will not permit their children to become pensioners upon public charity, and be subjected to the taunts of those in better circumstances, who will not fail to administer those taunts. But free schools, by bringing all upon a level, remove this objection. The children of the rich do not then have access to the school, because their parents have enough and to spare ; nor those of the poor, because their neighbours are charitable and humane, and the Government is generous or bountiful; but both attend, because they are *children*, endowed with faculties of infinite worth, and because their education is a birthright, and must be obtained as a matter of course. Could public opinion be brought to this point in the Province of Quebec, we should see our public schools crowded with children, whose object would be, not to while away their time, but to store their minds with useful knowledge,—not to escape from parental restraint, but to mould and fashion their mental and moral character after the best models, and prepare themselves to act their part upon the great stage of life. But I am satisfied that nothing short of an universal, comprehensive free school system can place the children of this Province in such an honorable position.

And as to those parents who are able, but unwilling to send their children to school, the plan I suggest would most effectually meet their case. Nothing then could prevent their children from enjoying the advantages of others; for if their parents are not open to mental persuasion or conviction of judgment, they would unquestionably be to fine and imprisonment.

The second objection to the rate-bill is, that it makes teachers dependent on the good opinion, and subject to the caprice of the parents of the children they teach. The more independent the teacher is of the parents, the better. The Commissioners are the proper parties to come in between the two in case of difference of opinion, or difficulty of any kind. Then as to a knowledge of a teacher's qualifications, the majority of parents are certainly not competent judges; yet they are continually interfering, where they are called upon to pay a school bill; for, as a great author remarks, "there is a very common infirmity of human nature, inclining us to be most curious and conceited in matters where we have least concern, and for which we are least adapted by study or nature."

Do not understand me, however, as prohibiting parents from taking an interest in the education of their children. Much of their children's success will depend upon that interest, and by judicious co-operation, they may greatly strengthen the teacher's hands; but let them beware of weakening his influence with their children.

Another phase in which this objectionable dependence displays itself, consists in making the amount of a teacher's wages depend on the number of children under his instruction. The agreement with teachers in this Province is, generally, to pay them the government grant for their section, and permit them to charge each pupil a certain sum per month or quarter. But a small portion of the teacher's salary can be considered as definite by this arrangement. The inducement to the teacher to accommodate himself to the prejudices of the people, is very strong; dissatisfied parties will have it in their power materially to reduce his wages; and the interests of education may be greatly retarded. It is better, therefore, for all parties, for the teacher himself, for parents, for the Commissioners who have the supervision of the school, and for the children, that the teacher's income should be fully determined at the time of his engagement, which can generally be done only under the free system.

What I recommend is no novelty. The plan has been tried in other countries, and with all the results I have claimed for it. Several of the Northern States of America have had free schools in operation for many years. Those in the State of Massachusetts have secured general education, and have brought to the head of affairs some of the poorest children in the land. In the State of New York, the introduction of the free school system caused an accession of 100,000 children to the Common Schools of that State in a single year. In the Kingdom of Prussia both free schools and compulsory education have been in existence for about half a century. The effect has been universal intelligence, and as "knowledge is power," Prussia has developed a power which has no parallel in the history of modern nations, if indeed in the history of the world. During the wonderful campaign which has brought France so terribly under her power, even her common soldiers have evinced a knowledge which has fitted them for any position or emergency. In Sweden compulsory education has been the law for several years, and with the best results. In the neighboring Province of Ontario, for twenty-two years past the residents of each school section have been authorized by law to determine by a vote, at the beginning of each year, whether their school should be free. The principle so grew into favor, that all but a mere fraction of their schools have been free for several years past; and to that feature in her common schools Ontario has been much indebted for the excellent school system which has commanded the admiration of all who have investigated it. And I am pleased to see that at the session of the Ontario Legislature held this winter, all the common schools of that Province are declared free, and education has been made compulsory. The result of these great measures to the sister Province, will unquestionably be the crowning of the great educational edifice, rendering the system complete, and securing the universal education of the succeeding generations. May the time be near when this Province shall imitate Ontario in her noble school system, and when education here shall be alike generally diffused.

To make free schools just in principle, however, besides being established upon such a basis as will render them generally acceptable, as I have already shown, two other conditions are necessary : viz., good school houses and good teachers. To tax all the property of a school section for the education of all the children in that section, when there is not ample accommodation for the school-going children, is evidently unjust. Large and commodious school rooms, made comfortable in their internal arrangements, should be provided in all parts of the land, and furnished with maps and apparatus, with all the improvements suggested by modern science. That we have such at present, is what, I presume, no advocate of our school system would claim.

Then, with respect to teachers, the most efficient possible should be procured, and that even at a large increase in expense. The practice of selecting school teachers on the ground of their cheapness, ought to be abandoned. But it has been carried to a great extent in some localities. An anecdote is related of a schoolmaster in a country which shall be nameless, who was employed in that capacity, for the very excellent reason that he had become too old and infirm to take care of a farmer's pigs, and he was appointed, as to a business next in importance, to take care of the children of the neighbourhood. Being interrogated by a visitor as to what he taught them, he replied with perfect sincerity and composure, "Nothing." And to the question, "Why he taught them nothing?" he answered, with frankness and simplicity, "Because I know nothing myself."

The following from an American writer can scarcely be considered a caricature: "What motives are now most influential in prompting men to follow the business of common school-teaching? Some engage in this employment during the winter months, because they can make higher wages by it than by farming or mechanical labor. Some follow the profession of teaching, because they are too feeble to endure the more hardy and often more coveted toils of active out-door employment. Others again, because they have failed of success in all other pursuits. Others, for the more honorable purpose of aiding themselves in obtaining a liberal education. And the multitude are made up of thriftless adventurers of every grade, too lazy to work, too poor to live without it, and much more fit to be peddling wooden nutmegs, or making hickory hams, than to undertake the task of training the youth of a nation to the knowledge and love of their duties as citizens and men."

I am happy, however, to bear my testimony to the excellent and improving character of our common school teachers. We have those who make teaching a profession, and intend to follow it while they are able. They have done, and are doing a great work, in moulding the mental and moral character of human beings, and are really amongst the greatest benefactors to their race. Such men deserve every encouragement, and ought to be remunerated for their valuable services, far beyond what they have been accustomed to receive. Our Provincial Normal Schools are performing an excellent service for the country, by providing it with a superior class of teachers, and securing greater uniformity in the system of teaching.

I intended to make some observations on superior education; but having already extended this lecture beyond its original limits, I find myself compelled to omit this branch of the subject. Perhaps I cannot better conclude, than by presenting to you the following plea for Free Schools, from the pen of the poet Wordsworth, who thus vindicates the right of the poorest child in Great Britain, to be *free* from the dominion of ignorance:

"O for the coming of that glorious time,
When, prizing knowledge as her noblest wealth
And best protection, this imperial realm,
While she exacts allegiance, shall admit
An obligation on her part, to *teach*
Those who are born to serve her and obey;
Binding herself by statute to secure
For all the children whom her soil maintains
The rudiments of letters, and inform
The mind with moral and religious truth,
Both understood and practised,—so that none,
However destitute, be left to droop
By timely culture unsustained; or run
Into a wild disorder; or be forced
To drudge through weary life without the help
Of intellectual implements and tools;
A savage horde among the civilized,
A servile band among the lordly free!
This sacred right the lisping babe proclaims
To be inherent, by his Maker's will,
For the protection of his innocence:
And the rude boy—who, having overpast
The sinless age, by conscience is enrolled,
Yet mutinously knits his angry brow,
And lifts his wilful hand, on mischief bent,
Or turns the godlike faculty of speech
To impious use—by process indirect
Declares his due, while he makes known his need.

This sacred right is fruitlessly announced,
This universal plea in vain addressed,
To eyes and ears of parents who themselves
Did, in the time of their necessity,
Urge it in vain; and, therefore, like a prayer
That from the humblest floor ascends to Heaven,
It mounts to reach the State's parental ear;
Who, if indeed she own a mother's heart,
And be not most unfeelingly devoid
Of gratitude to Providence, will grant
Th' unquestionable good—which, as we, safe
From interference and external force,
May grant at leisure, without risk incurred,
That what in wisdom for herself she doth,
Others shall ne'er be able to undo."

PAPER V.—THE RED RIVER EXPEDITION OF 1870.

BY LIEUT. H. S. H. RIDDELL, 60TH RIFLES.

(Read before the Society, March 15th, 1871.)

IN the year 1869, it was finally settled that the country known as Prince Rupert's Land, with all the territorial rights of the Hudson's Bay Company, should be transferred to the Dominion of Canada, on payment of a sum of £300,000. Up to this time, the Hudson's Bay Company were the actual rulers of the colony, as they had power to monopolize the whole of the fur trade, fur being the only export from the country. Throughout the whole of the Settlement, the idea of this cession of their lands and rights caused much indignation; and in the autumn of the year 1869, the first symptoms of a rebellion were discovered. One of its principal promoters was a French-Canadian, of the name of Louis Riel. He is described as having been educated in Canada, and afterwards obtained a situation in St. Paul's, Minnesota, where he lived for some time. Having been dismissed from his situation, he returned to Fort Garry, and, towards the end of 1869, headed the first act of resistance to the new *régime*, by warning a government surveying-party out of the neighbourhood in which they were engaged.

He then organized a government of his own, assisted by another similarly-disposed person, named O'Donoghue, and enthroned himself in Fort Garry as president of the settlement. The Honourable William Macdougall, Minister of Public Works, was chosen by the Canadian Government as first governor of the new Province, and proceeded to Fort Garry to assume his duties. On his arrival at Pembina, a small village on the boundary of British and American territory, he found that the insurgents were determined to prevent his entry into the settlement, and had an armed party stationed on the road between Pembina and Fort Garry for that purpose. Mr. McDougall was, therefore, unable to go further, and had to remain at Pembina for some months. In the meantime, Riel was having it all his own way: he secured all the arms and ammunition in possession of the Hudson's Bay Company, and served them out among his followers; he searched private houses, and possessed himself of anything that he thought might prove of use. Those of the inhabitants who did not feel inclined to take the oath of allegiance to him, were imprisoned by his orders; and a Canadian, of the name of Scott, who to the last maintained his refusal to take this oath, was condemned to be shot. A mock court-martial was assembled for his trial; and at the execution of the sentence of death, there was nobody in the settlement who had the courage to say a word against this informal murder.

These events determined the government upon sending an armed force to the Red River to restore order and maintain the Queen's supremacy; and money for that purpose was voted in Parliament at the same time that the bill for the transfer of the new province, called the Manitoba Bill, was introduced. The Imperial Government arranged to pay one-fourth of the expense of this expedition, and the Dominion of Canada was to pay the remainder.

The organization of the force was entrusted to Lieutenant-General Honble. James Lindsay, who had been sent out from England for that purpose, and who, a few years since, had been in command of one of the military districts in this country. Lately, he has held the position of Inspector-General of Reserve Forces in England. Colonel Wolseley, late Quarter-Master-General in Montreal, was appointed to command the expedition, which was composed of the following troops:

Royal Artillery:—19 non-commissioned officers and men, under Lieut. Alleyn;

Royal Engineers:—19 non-commissioned officers and men, under Lieut. Heneage;

1st Battalion 60th Rifles:—26 officers and 351 non-commissioned officers and men, under Colonel Feilden;

Army-Service Corps:—12 non-commissioned officers and men;

Army-Hospital Corps:—8 non-commissioned officers and men;

1st, or Ontario Battalion of Militia:—28 officers and 350 non-commissioned officers and men, under Lieut.-Colonel Jarvis;

2nd, or Quebec Battalion of Militia:—28 officers and 350 non-commissioned officers and men, under Lt.-Col. Casault;

Making a total of 84 regimental officers and 1109 non-commissioned officers and men.

The staff consisted of:

Colonel Wolseley, commanding;

Captain Huyshe, Rifle Brigade, } Aides-de-
Lieut. Denison, Governor-General's Body-Guard, } Camp;

Lieut.-Colonel Bolton, Royal Artillery, Deputy-Assistant Adjutant-General;

Major M'Leod, Brigade-Major of Militia;

Lieut.-Colonel McNeill, V.C., attached to staff;

Surgeon-Major Young, M.D., 60th Rifles, Principal Medical Officer;

Staff-Assistant-Surgeons Shaw, Robertson, and Chatterton;

And the following officers of the Control Department:

Assistant-Controller Irvine;
Commissary Pennell;
" Mellish;
Deputy-Commissary Marston;
" " Meyer;
" " Beamish;
Assist.-Commissary Jolly.

Transport Service:

Captain Nagle, Captain Money, and Lieut. Smyth, late R. C. Rifles;
From the Militia, Capt. Peebles was attached as Deputy-Commissary.
Total, of all ranks, 1213.

The expedition was to start for Lake Superior as early as possible in the spring, and recruiting for the militia regiments was carried on rapidly. No lack of either officers or men was found; and had it been necessary to raise another entire battalion, it could in a very short time have been accomplished. The Crystal Palace, in Toronto, was converted into a barrack, and for some weeks was occupied by the militia battalions. The boats to be used (140 in number) were supplied by different boat-builders throughout the Dominion, who had been furnished with the size and description of the boats required by the agent of the Public Works Department. This department had also engaged to have a road cut through the forest, and ready to be used on our arrival, from Thunder Bay to Lake Shebandowan, a distance of 46 miles. The officers entrusted with the organization and command of the force had not travelled further on the route than Collingwood, and, therefore, were obliged to believe everything they were told about the road by Mr. Dawson, the government engineer.

Lieutenant-General Lindsay personally inspected the 60th Rifles and the militia, previous to their departure; and on the 21st May, 1870, the first detachment of the expedition left Toronto for Thunder Bay. It consisted of 3 officers (including myself) and 51 men of the 60th Rifles, under Captain Ward, and 1 sergeant and 3 men of the Army Hospital Corps; it was accompanied by Colonel Wolseley and some of his staff, and also by Mr. Dawson.

The men were armed with the short Snider breech-loading rifle, and carried 60 rounds of ammunition. The officers were supplied with breech-loading rifle carbines, and also carried 60 rounds. In addition to this weapon, the regimental officers were allowed to carry any others they chose, except swords; and on the day of their departure, appeared with their persons profusely decorated with revolvers and deadly-looking scalping-knives. No one could take a large wardrobe with him, as the regulation-weight of baggage allowed to each officer, 90 lbs., was strictly enforced, and the men had only what they could carry in their knapsacks. No one officially connected with the equipment of the expedition, as far as regarded clothing, could have had much idea of the description of work the troops would be required to undertake, or, doubtless, a more suitable kind of dress would have been supplied.

The Northern Railway Company put on special trains for the conveyance of the troops to Collingwood, a distance of 94 miles from Toronto; and on our arrival there, we at once embarked on board the fine steamer *Chicora*, one of the line of mail-steamers plying between Collingwood and Thunder Bay. A great number of the horses which were to be used in the transport-service were shipped on board the *Chicora*, under charge of some of the men who had been engaged as drivers and teamsters. Most of these men were singularly ignorant of their duties, and in several instances were detected in the act of ill-treating their horses; and the severe examples made of those so detected proved to any others similarly inclined that the *Society for the Prevention of Cruelty to Animals* had its representatives in uninhabited as well as in inhabited regions. The *Chicora* sailed that evening, and on 23rd May we arrived at the *Sault St. Marie.* Here we had to land the troops and munitions of war, and send the steamer almost empty through the canal on the American side of the St. Marie River. On the first trip of the *Chicora* that season, she had been refused a passage through the canal by the American government, and had to land all her freight on the opposite side. Had she been refused admittance on this occasion, whether empty or otherwise, it would not have given us any extra trouble, as the *Algoma*, another steamer of the same line, had been sent through empty some time since, and was kept on Lake Superior in case of such an emergency. Besides the *Algoma*, the propellers *Brooklyn* and *Shickluna* had been chartered. The *Chicora*, however, passed safely through; and after a march up the banks, of about three miles, the men were again embarked and the stores shipped.

A detachment of militia, consisting of two companies, under the command of Lieut.-Colonel Bolton, had been sent to the Sault St. Marie to assist in the transport of the stores from Lake Huron to Lake Superior; and hearing reports that a Fenian cruiser had been heard of in the latter lake, Colonel Wolseley determined upon sending one company on board the *Shickluna*, which had three schooners, laden with stores, in tow, to protect it in case of necessity. Lake Superior was safely crossed, and early on the morning of 25th May the high and imposing headland of Thunder Cape was in sight. The entrance to the Bay is between Thunder Cape, 1,350 feet above the level of the lake, and Pie Island, which lies four or five miles to the south-west, at an elevation of 850 feet. A few hours afterwards saw us at anchor off the depot, which had been formed at the commencement of the Dawson Road, and which was named Prince Arthur's Landing by Colonel Wolseley. We had heard a great deal of the beauty of Lake Superior, and certainly had during our voyage passed through some very fine scenery, and, consequently, were very much disappointed at the desolate appearance which Prince Arthur's Landing presented on our disembarkation. A fearful fire, extending over a surface of many square miles, had lately raged over the country between the Landing and Shebandowan Lake, destroying a great deal of the road and some of the bridges on it. A forest through which fire has passed presents a melancholy spectacle. Half-burnt trunks of trees here and there stand erect, shorn of branches, waiting for another conflagration or strong wind to prostrate them to the ground. There they lay, piled in horrible, blackened confusion, until the destroying element, passing over again, completes their destruction.

The forest had formerly extended to the water-side; but the fire had saved us the trouble of clearing the ground for our camp, which was pitched on a hill not far from the lake. The fire had only taken place a short time prior to our arrival; and although, happily, no lives were lost, some persons had very narrow escapes from it. Mr. St. John, the special correspondent of the Toronto *Globe*, attached to the expedition, told me that he had to drive for his life on his return from a survey of the road, and that had he not been within half a day's journey of Lake Superior at the time, he must have been overtaken by the flames. Four miles from the Landing is the mouth of the Kaministaquia River, or Kaministakwoya, according to Sir John Richardson, " the river that runs far about;" half a mile up which, on the left or north bank, Fort William, one of the principal posts of the Hudson's Bay Company, is situated. At a distance of two miles from the Fort is the mission of the Immaculate Conception, which is under the charge of the Reverend Pierre Choné, who has for many years resided there. Three miles further up the river lies McKay's Mountain, which has an elevation of 1000 feet above the lake. Six miles north of the Landing is the Current River, near which are the Silver Mines, owned at that time by a Montreal mining company.

The first care of the British soldier, on settling down, is to make himself as comfortable as he possibly can, under the circumstances ; so the tents were pitched on the softest piece of ground that could be discovered, and the daily rations of Her Majesty to her soldiers on service—salt pork, tea, and biscuit—were speedily served out.

To each man the following ration was issued daily :

1 lb. biscuit, or 1½ lbs. bread or flour ;
1 lb. salt pork, or 1½ lbs. fresh meat ;
2 oz. sugar, 1 oz. tea, ⅓ pint beans, or ¼ lb. preserved potatoes.

As we had no fresh meat on the day of disembarkation, we were obliged to put up with the salt pork.

Among the men there are generally a good many that are very fair cooks; consequently, they got on all right ; but in the case of the officers, it was different. From Colonel Wolseley downwards, all had at first a great objection to have recourse to the services of a professed cook : we had come there determined to rough it, and rough it we would. A solemn conclave was held, which resulted in my being appointed cook to the commander-in-chief, with one of my brother-officers to assist me. I never saw a piece of pork cooked in my life, but determined to do the best I could. I seized some sticks, lighted them, threw a huge junk of pork into a pot of water, put it on the sticks, and sat down to watch the effect. The fire was soon exhausted, and so was my patience ; and, like a bad workman blaming his tools, I was just beginning to abuse the pork for not boiling, and the fire for not burning, when the arrival of the colonel put an end to my difficulties. He shewed me, in the scientific manner of an old campaigner, how to dig a trench in the ground, and with stones and sticks to construct a fender over it, on which to place my cooking-utensils; and the result was, that when dinner-time approached, a hard, tough mass of over-boiled meat was fished out of the pot, with the assistance of a forked stick, and served up, with tea and biscuit, as the mid-day repast of the officers.

Hard work, of every description, went on day after day, commencing at sunrise, and everybody seemed to work with a will. A large raft, or scow, was employed for the purpose of bringing the horses and stores from the ship to the landing, whence they were conveyed to the different tents and sheds prepared for them; and road-making and the preparation of the militia camp were also commenced. An examination of the road shewed it to be in anything but the good condition reported. Thirty miles of it were considered as made; but from the nature of the ground in heavy weather, many parts became almost impassable. Twelve miles were cut through the forest; but the stumps and roots of the trees had not been cleared away, nor the road corduroyed in swampy or muddy parts. The remainder of the distance to Shebandowan Lake had not been touched, and was still virgin forest. A large number of troops were daily employed at work on the road. The soil being principally sand and peat, for some distance, it was necessary to lay down on it what is called corduroy, as, after a heavy rain, the road became so slippery and uneven, that the horses were unable to drag their heavy waggons over it without great labour. Logs of wood, ten or twelve feet long, were cut and laid down on the road, side by side, and branches and earth thrown over them to keep them packed close together; in the swampy places, drains were dug and small bridges built, in order to prevent the road being flooded after a fall of rain..

On 27th May, another detachment of the 60th Rifles arrived in the steamers *Algoma* and *Brooklyn;* it was accompanied by Mr. Simpson, the member for the district of Algoma, who was on his way up the country to conciliate the Indians and explain the object of the expedition. Day after day, steamers and schooners arrived, bringing troops and stores from Collingwood. The militia regiments were encamped about half-a-mile from the landing, and employed like the regulars in working on the road and landing stores from the ships. A large flat-bottomed scow was worked by a rope from the vessels to the wharf, and for five weeks we had the services of a small tug.

While at Thunder Bay, we had an opportunity of seeing for the first time in many cases the red-skin in full paint and feathers. Three Chippewa Indians and a squaw arrived from Fort Francis, in order to see what was going on, and report accordingly to their tribe. They were headed by a chief of the tribe, named Black Stone, who was attired in rather a richer dress than the others, and wore a sort of crown on the back of his head, formed of porcupine quills and eagle's feathers, bound round with mink and ermine. They were introduced formally to Colonel Wolseley, and proceeded at once to the object of their visit, which was, in reality, to get as much out of him in the way of presents and food as they could. They avowed their great loyalty to the Queen, but were very much astonished at finding she had not considered it necessary to ask their leave before cutting a road through their territory. They were assured that we had no intention of appropriating their lands, but merely wished for a right of way. This explanation seemed to give satisfaction, for they at once consented to allow us as much wood and water along the route as we desired. The band seemed to astonish them; but they were too dignified and haughty to express any surprise. They stayed at the landing until 6th June, and then returned to Fort Francis.

As it was feared that the Fenians would attack the landing after the departure of the expedition, a redoubt, or small fort, with a magazine inside it, was constructed for the reception of the ammunition, which was to be left behind. A company of the Quebec militia, under Captain De Bellefeuille, with two subalterns, was left behind in charge of it.

The River Kaministaquia, flowing out of Lake Shebandowan, is joined by two others of the same size before it empties its waters into Thunder Bay. It was believed that the navigation of this river by the boats was impossible, on account of the numerous and dangerous rapids and falls; but as the road was in a very incomplete state, Colonel Wolseley determined to send a company up this river as an experiment. It was commanded by Captain Young; and the success which attended the great efforts made by his men justified the selection made by the Colonel, as this route to Shebandowan now rendered us independent of the road. Other companies, both of regulars and militia, were afterwards sent up by the Kaministaquia.

The scenery on the Kaministaquia is very fine; the Kakabeka Falls, 30 miles from Lake Superior, being one of the most picturesque spots visited on the route. These falls are 120 feet high, and are at an elevation of 175 feet above the level of Lake Superior. The length of the road from Thunder Bay to Shebandowan is from 46 to 48 miles; at the place where it crosses the Kaministaquia, 21 miles from the bay, and also five miles further on, where it crosses the Mattawan, bridges had been built and depots formed for the forwarding of stores to the lake.

Different companies were stationed at these places, in order to assist in the completion of the road. As the work progressed, more detachments of troops were sent from Thunder Bay, and those in advance sent on towards Lake Shebandowan. The company to which I belonged left the landing at three o'clock on the morning of the 3rd July, and proceeded by a march of two days to the Mattawan Bridge, followed the day afterwards by the head-quarters of the expedition. During this march, the men of my company for the first time found the use of the mosquito-nets with which they had been supplied. These veils are made of fine net, made to fit close round the cap and neck, and are kept off the face by a crinoline wire. They were seldom used after we left Lake Shebandowan, except for the purpose of straining muddy or discoloured water preparatory to making tea. During the time that the men were on the roads, they were too busy to mind the attacks of the rapacious mosquito; and at night they used to keep it out of their tents by lighting a small fire inside, and allowing it to smoulder till the tent was full of smoke. No insect of any kind would then come near.

The officers in charge of the companies which had been sent up to the Mattawan Bridge by the river, complained bitterly of some of the men who had been engaged as *voyageurs*, but praised the skill and courage of the Iroquois Indians. Like the teamsters of the transport-service, the former seemed to have been engaged indiscriminately, whether they had had any experience or not in managing boats in rapid water. I know, for a fact, that one man had left his situation as driver of the omnibus belonging to the Queen's Hotel, in Toronto, in order to follow the fortunes of the *voyageurs;* and another, in answer to my enquiry whether he had ever been in a boat before in his life, answered, indignantly: "Why, certainly! isn't my brother boss of a steam-tug in Toronto?"

Gradually we worked our way towards the lake—the point at which our road-making labours would cease. Young's Landing, three miles from the Mattawan Bridge, so called after the officer who may justly be entitled the pioneer of the Kamanistaquia; Brown's Lane, or Calderon's Landing, seven miles further on, and Oskondaga Creek, were passed in their turn. From Brown's Lane most of the stores were sent up by the Mattawan River to Oskondaga Creek, in consequence of the incomplete state of the road; and on their arrival at the latter depot, they were forwarded by road to the Dam-Site, or Ward's Landing, where they were again shipped, and sent four miles up the river, to McNeill's Bay, in Shebandowan Lake. Colonel McNeill, the present Military Secretary to the Governor-General, was stationed at the lake to superintend the departure of the different brigades of boats, the provisioning of which was undertaken by two officers of the Control Department. The boats, as they arrived, were hauled up on the beach of the lake to be repaired by a ship's carpenter; and much they needed it after the rough treatment they had undergone on the rocks in the rivers, and the jolting they had received when on the top of the waggons. When ready again for use, they were launched and distributed in brigades of six to each company, each boat being intended to carry nine or ten soldiers, besides three Indians or *voyageurs*. Fortunate was the officer who secured for his boat the skilful Iroquois, the finest boatman in Canada; whilst he who was entrusted to the tender mercies of the ex-omnibus-driver soon came to the conclusion that in the stable, not in the boat, was where his guide found himself most at home.

Sixty days' provisions, consisting of salt-pork, beans, preserved potatoes (sent out from England expressly for the expedition), flour, biscuit, pepper, salt, tea, and sugar, were issued to each brigade. Besides provisions and spare stores, each boat had to carry camp equipment, ammunition, and an arm-chest, containing the rifles, cooking-utensils, and the men's own scanty allowance of baggage, consisting of their knapsacks, with two grey blankets and a waterproof sheet each. With each brigade was a carpenter's tool-box, which was found of great use, and contained the requisites for mending the boats. The distance to be travelled by water was about 560 miles. The boats, which were built in Quebec, were 31 in number, and were all of the carvel build; sixteen of them were rigged with sprits, and the others with lug-sails. They had been constructed under the superintendence of Mr. Pentland, assisted by Captain Dick, the latter a gentleman who has long been in charge of the ship building yards of Messrs. Allan Gilmour & Company, by whom he was recommended. The remainder of the boats, 119 in number, were clinker-built. The average length of the boats was 32 feet and 6 feet beam ; each could fit-up two masts, and six oars were generally used. A light gig and three large bark-canoes were supplied for the staff. The boats and *voyageurs* not required for the conveyance of troops, were employed in forwarding a reserve of supplies to Fort Francis. Along the route, about 42 portages, varying in length from 40 to 1800 yards, had to be crossed ; and portage-straps and slings, to be used when carrying the stores across, were issued to the different boats. Up to the time that the different detachments left Shebandowan, they had been supplied with fresh meat, except when going up the Kaministaquia ; but when they started across the lake, until they reached Fort Garry, they had neither fresh meat nor vegetables, except at Fort Francis and Fort Alexander, where a few head of cattle were procured. Fresh bread had been baked at Prince Arthur's Landing, Mattawan Bridge, and the Dam-Site ; and as field-ovens were taken by the Army-Service Corps, we had bread again at Fort Francis and Fort Garry. It was always excellent—as, indeed, were the other rations of every description that were issued. The ration of pork, 1 lb., was hardly sufficient for a man who had worked from 3 a.m. until 6 p.m., incessantly ; and had it been increased to 2 lbs., the men would not have found much difficulty in disposing of it. In fact, so hungry were they, sometimes, that I have seen a man eat his salt pork *raw*, as he could not wait until it was cooked for him.

The distribution of the force was as follows :—The Royal Artillery, Royal Engineers, and 60th Rifles were to proceed to Fort Garry, and return without delay. The Ontario battalion was to proceed to Fort Garry, leaving one company encamped at Fort Francis until 1st September, when it was to proceed to Fort Garry by the north-west angle of the Lake of the Woods. The Quebec battalion was to proceed to Lower Fort Garry, or the Stone Fort, with the exception of one company left at Prince Arthur's Landing until the return of the regulars, when it was likewise to return to Montreal.

In order to give you some idea of the weight of the cargo the men had to pull in the boats, and carry over the portages, I will describe the exact quantity of stores with which my boat was loaded before leaving McNeill's Bay:

Pork—9 barrels, at 200 lbs. each=1800 lbs. Flour—7 barrels, at 100 lbs. each=700 lbs. Biscuit—5 barrels, at 100 lbs. each=500 lbs. Tea—3 canisters=50 lbs. Beans—2 bags=60 lbs. Potatoes—2 boxes=80 lbs. Ammunition—2 boxes=100 lbs. Total, 3,290 lbs. Our boat and camp-equipment also added considerably to the weight.

A bottle of mosquito-oil, which was not of the slightest use, was put in each boat; it smelt so horribly, that the men would seldom use it on their hands and faces, and much preferred being bitten by the insects it was supposed to protect them from. However, when the supply of coal-oil failed, it came in handy.

The portage-strap is a long piece of cariboo-hide, from 2½ to 3 inches wide in the centre, and tapering off gradually towards the ends, in order to enable it to be secured or fastened round the barrel or package. The Indians, skilled in its use, shewed the men how to fasten it, so that the load would rest on the upper part of the back, and lie there by the strap passed round the forehead. Short slings, made of rope, for carrying the heavy barrels over the portages, were also supplied: these slings had a loop at each end, and with two short poles formed a sort of hand-barrow, in which the pork could be carried by those who were unaccustomed to the use of the portage-strap. The men soon got into the way of carrying heavy loads with the portage-straps, and the slings were then discarded.

On the evening of Saturday, 16th July, the first two brigades of boats, consisting of two companies of the 60th Rifles, under command of Colonel Feilden, left McNeill's Bay, on their long journey of nearly 600 miles: they were accompanied by a detachment of Royal Engineers and of Royal Artillery, with two of the seven-pounder mountain-guns, mounted in boats, especially prepared for them. On the 17th July, two more companies, under Captains Dundas and Buller, started. On the 18th July, one company, under Captain Northey, was despatched. This brigade was accompanied by Colonel Bolton, D. A. A. General; and on Tuesday, the 19th, Captain Wallace's company, to which I was attached during the expedition, left. Captain McCalmont, an officer of the 9th Lancers, who had come out from England to join the force, took passage with us. The following day, 20th July, Captain Calderon's company left—the last of the regulars. During the advance, the expeditionary force, from front to rear, covered the route for 150 miles. Very few guides could be procured to pilot us to Fort Francis; but on arrival there, Indians and half-breeds, accustomed to the navigation of the Winnipeg River, were engaged. Thus, the first detachment of the expedition left Shebandowan on July 16th; and on August the 2nd, the last company of the militia was despatched. I propose, now, to follow the fortunes of my own company during the advance to the Red River.

Shebandowan Lake is about 21 miles long and six miles across in its widest part: the entire length of the lake, which runs in a west-by-north direction, has to be traversed before reaching the portage leading to the Kashaboiwe Lake. The stream by which the Kashaboiwe Lake discharges its waters descends about 29 feet, in its course of 70 chains, to Lake Shebandowan. Besides the boats which conveyed the company, there was one which was appropriated to the use of the Army-Service Corps, commanded by Mr. Mellish: this officer, not being quite sure of his swimming abilities, should they be called into requisition, had been careful to select the largest boat he could find ready for use; whereas the other officers had been anxious to obtain those of the smallest and lightest build. The beautiful evening on which we started seemed an augury of fine weather, and success on this our start into the depths of an almost unknown wilderness, and the spirits of the men were high in consequence. The hard work they had done on the roads and rivers for the last month, and the healthy life they had led in the open air, made them well fitted for the great task they had in hand. No spirits were issued or allowed, but a large quantity of tea instead; and the fact that, from the commencement to the end of the expedition, sickness of any consequence was unknown, proved that the temperance plan succeeded, indeed, admirably.

Not wishing to tire the men the first day, the officer in command halted the little fleet about 8 p.m. The boats were then safely moored on the beach, and a tent pitched on the banks of a land-locked bay for the night. The men, anxious to accustom themselves to bivouacking, preferred to sleep in the open air, in order to be ready to make an early start in the morning. One of the most violent thunder-storms I ever witnessed passed over us that night: the rain for hours poured down incessantly, and the flashes of lightning were frequent, and of extreme brilliancy. The men were huddled together under the tarpaulins and water-proof sheets, as they had not had time to pitch their tents before the fury of the storm was upon them. Early in the morning the boats were taken to a safer anchorage, as we feared the strong wind would blow them on shore. Several times we attempted to start, but were unable to make any way against the high sea that was running, until the evening, when the wind abated. The following day, we arrived at the Kashaboiwe Portage.

I will now describe the manner in which the boats were conveyed across the portages. The stores were first carried across, and piled, ready for re-shipment, close to the water-side. The boats were then hauled ashore, and the tow-lines fastened to their bows. The men then harnessed themselves with their portage-straps and slings to the tow-lines; and the boats, with a few men on either side to keep them on their keels, were dragged over the skids of wood laid down to serve as rollers along the portage. As the companies in front of us had cut the skids and laid them down, we got over the portage without much delay, in spite of the great quantity of stores we had to carry.

On July 22nd, steering due north, we crossed Lake Kashaboiwe, which has a surface-area of 8 square miles, to the Height-of-Land Portage, one of the longest on the route, being over a mile; and it was not until the 25th of July that we launched our boats again for the voyage across the Lac des Milles Lacs, $20\frac{19}{100}$ feet above the level of Lake Shebandowan. This lake is of great size, and of a very curious and straggling shape, and, from the innumerable islands in it, well deserves its name. It was, therefore, extremely difficult to find our way across it, as our Chippewa guide several times lost his way. We were, however, more fortunate than some of the other companies, the guides of which allowed them to wander for miles out of their course, thereby losing a great deal of valuable time. After passing the Height-of-Land, we had the stream in our favour for the rest of the way. In the Lac des Milles Lacs, we met, for the first time, the savage in his native wilds. The Indians we met here belonged to the same tribe as the haughty chief who had visited us at Thunder Bay, and were certainly the ugliest and dirtiest people I ever saw. Immediately they saw us, they paddled round and round the boats, begging for provisions, and offering to exchange the fish they had caught for pork and flour. There were seldom more than three in each canoe, and could propel their little craft through the water at a great rate. Some of them had curiously-worked tobacco-pouches, made of beads and silk, and other articles of similar interest. Upon their bodies they wore very little clothing, and allowed the burning sun to shine down on their heads with no other protection against it than the long black hair they wore almost down to their shoulders. As they sat paddling in their canoes, I could seldom tell the men from the women, they were so much alike in dress and appearance. When we camped, they would remain near us all night, in hopes of getting something; and when we left, they would stay behind and eagerly search the ground for any bits of biscuit that might have been left.

They live in wig-wams, made of birch bark stretched over poles driven into the ground in a circle, and meeting at the top. A hole is left at the top to let the smoke of the fire out. When on the move, they generally take the birch bark with them, but leave the poles standing, Knowing the dirty habits of these poor people, we were careful to avoid pitching our tents anywhere near the remains of a wig-wam. How they manage to find means of subsistence during the long winter months, is a marvel; but in the summer they live on the fish with which all the lakes and rivers are abundantly stocked, and on the wild fruit which grows in plenty on shore. The woods are singularly destitute of game of any description.

Our work began at 3 o'clock in the morning, and before starting the men had some hot tea and biscuit. Afterwards, tents were struck, and stowed away again in the boats. At eight o'clock we stopped for an hour for breakfast, and at one o'clock for an hour for dinner. While the former meal was preparing, the lake was alive with human figures swimming and splashing about; for, thanks to Mediterranean experience, there were few in our regiment who were not skilled in the useful art of natation. Dinner over, we did not halt until dark, when tents were pitched, or, if the weather were fine, a bivouac for the night prepared. The rations, consisting of a pound of pork and a pound of biscuit or flour, with beans, tea, and sugar, were then served out, and supper cooked over the camp-fires, around which we sat while our meal was preparing, discussing the adventures of the day. Sometimes our daily fare was varied with the fish we had caught from the boats with a trolling-bait, or bought from the Indians. We used to make the flour into a sort of pan-cake, known among the men by the unappetising title of "choke-dog," from the extreme tenaciousness with which it was wont to stick in our throats when endeavouring to relieve the pangs of hunger. The biscuit was always very good, and when fried in pork-fat, and served up hot and greasy, was much relished.

After traversing the Lac des Milles Lacs, for a distance of 21 miles, the next portage, the Baril, was reached. Here we had to drag the boats up a steep incline of about 100 feet, and had very hard work. The Baril Portage, which leads into Baril Lake, is about 400 yards across. Eight miles across Baril Lake, which is the counterpart of the extremity of Lac des Milles Lacs, brought us to the *Brulé*, or Side-Hill Portage, the scenery round which was very pretty. On leaving the portage the boats were poled down a narrow stream for a mile and a-half, when we passed into Lake Windigoostigon, or Cannibal Lake, so called in commemoration of a deed of violence committed there by a band of Ojibways, in the year 1811. When crossing this long stretch of water, the wind, blowing strongly from the S. S. W., was dead against us, and, consequently, made our progress for some time rather slow. A row of twelve miles brought us to the entrance to the French River, down which we went at a great pace, a strong stream being in our favour. The numerous shoals and rocks in this river made the navigation dangerous in the extreme, and several boats received damage that compelled the officers in charge of them to run in-shore and bivouac for the night; in the meantime, the remainder of the boats had gone on to the Great French Portage, at which they did not arrive until nearly ten, p. m. By going down the French River we saved about a mile of portage. The water-level at the head of the French Portage is 55 feet below that of Lac des Milles Lacs. The timber on this portage consists of aspen, pine, and spruce. The French River flows into the Little French Lake, and another small river flows thence into Lake Kaogassikok. While crossing this lake, with a fine breeze behind us, we were overtaken by the mail canoe from Fort William to Fort Francis.

Mr. McIntyre, the Hudson's Bay officer at Fort William, had engaged to despatch a canoe every week on the arrival of the mail-steamers from Collingwood. It was manned by two half-naked savages, who gave us their mail-bags to look over, and allowed us to sort any letters and papers that there might be for our brigade. They seemed to fully appreciate the position they held, and pointed with great exultation to the small Union-Jack flying on the bow of their canoe, as they paddled swiftly away.

The next Portage was the Pine, 27 miles from the French Portage; thence across a small lake to the Portage des Deux Rivières, which, in a distance of 32 chains, brought us down 117 feet, into Sturgeon Lake.

The Deux Rivières Portage was one of the most difficult we had as yet encountered: in the centre of it was a high rock, up which a ladder of felled trees had been constructed; and at the side, steps were cut for the men to carry their loads up. Had one of the ropes snapped when hauling the boats up this ladder, the men at work would, doubtless, have received very severe injuries, and the boat been broken, to a certainty. At the mouth of Sturgeon River, leading into the beautiful lake of that name, we saw a sturgeon for the first time. As Longfellow would describe it:

On the white sand of the bottom
Lay the monster Mishe Nahma—
Lay the Sturgeon, King of Fishes:
Through his gills he breathed the water;
With his fins he fanned and winnowed.

The King of Fishes did not reign very long in this instance, for he was no sooner seen than an ounce of shot put an end to his existence. The Indian who discovered it was so excited, that he jumped out of the boat into the water, and returned, bearing the prize in triumph. He undertook to prepare it for our supper; and the roe, artistically cooked by one of the officers, was voted most delicious by all who tasted it.

The scenery on the Sturgeon Lake is well described by Professor Hind, in his narrative of the exploring expedition of 1857. He says:

" No lake yet seen on the route can bear comparison, for " picturesque scenery, with Sturgeon Lake. The numerous " deep bays, backed by high wooded hills or rocks, rugged " or smooth, according to their aspects; its sudden " contraction into a river-breadth for a few yards between " large islands, and the equally abrupt breaking-out again into " open stretches of water, offered a constant and most " pleasing variety of scene. The high, jutting points of " granite rock, which here and there confine the channel, " offer rare opportunities for beholding on one side an " intricate maze of island scenery, and on the other an " open expanse of lake, with deep and gloomy bays, " stretching, seemingly, into the dark forest as far as the " eye can reach."

After rowing the entire length of Sturgeon Lake, or, rather, the succession of lakes and rivers bearing that name, we arrived at the River Maligne, where there were several dangerous rapids to be run. At the first rapid, an Iroquois Indian, named Ignace, had been stationed with a band of skilled boatmen, consisting of Iroquois and French-Canadians, for the purpose of steering the boats down. To the indignation of the ex-omnibus-driver I before mentioned, and other *voyageurs* of his stamp, Ignace commenced his operations by turning every one out of the boats, except four soldiers left in each to row.

Three pilots then got into each boat, and, with their long paddles and sweeps, steered into the middle of the foaming waters. With a rush, and pulled as hard as the strong arms at work were capable of, the boats entered the rapids. The slightest mistake on the part of the steersman, and they would have been smashed to pieces on the huge rocks that we passed closer than was pleasant. Everyone worked as if for his life; and the wild cries of the Indians, as they shouted directions to each other in their strange language, made those looking on from the shore feel certain that some accident was going to happen; but the cheers and laughter of the crews, as the boats were pulled into smooth water at the foot of the rapids soon dispelled the illusion.

The river Maligne flows into Lac Lacroix, or the great Nequaquon Lake, from which we passed into Loon Lake and Nameukan Lake. While camped on an island in the latter, we were visited by about 100 half-starved, miserable-looking savages, who tried hard to induce us to part with some of our provisions. We had very little to spare, but gave them some flour and biscuit, in hopes of getting rid of them. Having crossed the Bare Portage, we came into the fine expanse of Rainy Lake, 50 miles long by 38 broad, and having an elevation above Lake Superior of 435 feet. A voyage of 40 miles along the lake, steering W. by N., brought us to the Rainy River, two miles down which Fort Francis, a post of the Hudson's Bay Company, is situated.

General Lefroy made Rainy Lake 1,160 feet above the sea, by barometrical measurement: he describes its shores as low, sterile, and rocky, timber being very poor, and, on the whole, the general aspect of the shores of the lake as very forbidding, and furnishing almost everywhere, on the ridges and hill-flanks, a picture of hopeless sterility and desolate waste. At the entrance to the Rainy River the scenery is very pretty, and the green and luxuriant foliage of the trees formed a pleasing contrast to the barren wilderness through which we had lately passed. After leaving Rainy Lake, we arrived at the head of the fine falls named the Chaudière, and saw Fort Francis lying on our right. Some days before our arrival, the Fort had been the scene of a great Indian meeting, which was called by the chiefs of the tribes, to have what they called a "pow-wow" with Colonel Wolseley. Mr. Mackenzie, the officer of the Company in charge of the Post, received us very kindly, and gave us some vegetables and other similar delicacies, which were much appreciated after our monotonous daily fare of fried pork and "choke-dog." The Commander-in-Chief had already arrived there, but said, "Good-bye! good-bye! go on! you are a long way behind the rest!"—almost before we had time to say "How do you do?" to him!

We replenished our stock of provisions, and left behind the useless *voyageurs*; and having obtained a guide who was experienced in the navigation of the Winnipeg River, we again embarked, and continued our voyage down the Rainy River that evening. The general course of this fine river is a few degrees to the north of west, for a distance of 80 miles by the winding of the river, and in an air-line 60 miles: the current is gentle and uniform throughout, except in the two rapids, called, respectively, the Manitou and Long Rapids, which let the river down about 5½ feet. The breadth of the river varies from 200 to 300 yards; its banks are thickly wooded with elm, balsam, poplar, ash, and oak. Sturgeon are very numerous, both in this river and in the Lake of the Woods, and form the staple food of the Indians, who preserve the flesh by drying it like pemican, and after pounding it up and mixing with oil, put it into bags made of sturgeon-skin. All night we drifted slowly down the river, two men sitting up in each boat to row while the others slept.

The Lake of the Woods, into which the Rainy River flows, is 72 miles in length, and is 377 feet above Lake Superior, or 977 feet above the level of the sea. From the mouth of the Rainy River to Rat Portage, the place where the Winnipeg River issues, is about seventy miles.

Having a strong breeze in our favour all the way across, we made a rapid passage, and arrived at Rat Portage, another post of the Hudson's Bay Company, on August the 11th, having done the distance from Fort Francis, on the Rainy River, in 72 hours, which we were told was the fastest passage on record.

Mr. Hind describes the Winnipeg River as follows: " Issuing from the Lake of the Woods through several gaps " in the northern rim of the lake, the River Winnipeg flows " through numerous tortuous channels for many miles of its " course, in a north-easterly direction. Some of the channels " unite with the main stream ten to fifteen miles below Rat " Portage, and one pursues nearly a straight course for a " distance of sixty-five miles, and joins the Winnipeg below " the Barrière Falls. The windings of this immense river are " very abrupt and opposite, suddenly changing from north-" west to south-west and from south-west to north-west, for " distances exceeding twenty miles. In its course of 163 " miles, it descends, by a succession of magnificent cataracts, " 349 feet.

" Some of the falls and rapids present the wildest and most " picturesque scenery, displaying every variety of tumultuous " cascade, with foaming rapids, treacherous eddies, and " huge swelling waves, rising massive and green over " hidden rocks. The pencil of a skilful artist may succeed " in conveying an impression of the beauty and grandeur " which belong to the cascades and rapids of the Winnipeg; " but neither sketch nor language can portray the astonishing " variety they present, under different aspects, in the grey " dawn of morning, or rose-coloured by the setting sun, or " flashing in the brightness of noonday, or silvered by the " soft light of the moon."

The Hudson's Bay Company's Fort at Rat Portage is on an island at one outlet of the Lake of the Woods, and is under the charge of Mr. Macpherson.

Mr. Butler, of the 69th Regiment, who had been employed on secret service in the Red River Settlement, met us on our arrival, and gave us a very alarming description of the dangerous rapids through which we had to pass on our voyage down the Winnipeg. He had just returned from Fort Garry, and described the Settlement as being in a very disturbed state. When he left, the Fenian flag was flying from the Fort. I had forgotten to mention that when crossing the Lake of the Woods, we had met a party of *voyageurs* from Fort Garry, which had been sent by the loyally-disposed residents there to urge Colonel Wolseley to push on the advance of the troops, on account of fresh disturbances and deeds of violence, and also to assist us in navigating the Winnipeg. The party was under the charge of a Mr. Monkman, whose experience of the country and knowledge of the people proved of great service to the expedition. Having crossed Rat Portage, a row of nine miles brought us to the Les Dalles Rapids. A short time before we arrived there, I had an opportunity of testing the truth-telling capacities of the Indians, whose veracity is generally much doubted. A handsome-looking savage, accompanied by his boy, paddled up to my boat from the shore, and made signs that he wished to exchange some fish and ducks for flour. I accosted him, first in English, then in French, and told my Indian to speak to him also; but he shook his head, as if denying any knowledge of the languages. Having got what he wanted, he paddled away, and, turning round in his canoe, shouted out, in excellent English: "Good-bye, boys!" Hearing one's native tongue in such an uncivilized region, from the mouth of a savage, was certainly a great surprise. He must have picked up some knowledge of the language at the posts of the Hudson's Bay Company, and, wishing to appear before us a savage to perfection, half-starving with hunger, thought it best to shew ignorance.

The Les Dalles Rapids are 20 chains in length, with a fall of 3 feet, and boats and canoes can run them with safety. Then 21 miles more of river, and we ran the Grande Décharge, a fall of 6 feet. The channel is very narrow and swift. The Yellow Mud Falls and Portage, the Pine Portage, with the dangerous Cave Rapids, which have often proved so destructive to the bateaux of the Hudson's Bay Company, and the De L'Isle Rapids, were passed safely in succession; and we came next to the beautiful falls and cascades named the Chûte-à-Jacquot, which occasion a fall in the river of nearly 13 feet. Having crossed the Portages named the Trois Points de Bois, which let the river down 37 feet, we arrived at the Slave Falls, the scene of one of those terrible incidents in Indian life formerly of frequent occurrence in these inhospitable wilds. Tradition tells that a slave of a ferocious master, maddened by long-continued cruelty, calmly stepped into a canoe above these falls, in the presence of the tribe, and, suddenly pushing off from shore, wrapped her deer-skin robe round her face, and glided over the crest of the cataract, to find rest in the surging waters below. The next falls were the Barrière and the Otter, both of which were passed safely. At the former we met a party of Hudson's Bay *voyageurs* on their way from Fort Garry to Fort Francis, with stores: they reported that Riel was still in possession of the Fort, and did not believe that the troops would ever reach him.

A distance of seven miles from the Otter Falls lie the dangerous Seven Portages. The navigation between each of these portages is difficult and dangerous; and although we got safely past them, the other companies, both in front and behind us, were not so fortunate, as was proved by the wrecks of boats hauled up on shore, which we saw on our return journey. The 1st Galais de Bonnet, 2nd Galais de Bonnet, Grande Bonnet, 1122 yards long, Petit Bonnet, and the White Mud, were the next portages we had to cross before reaching the Silver Falls, which Professor Hind describes as being, perhaps, the most imposing and beautiful of all the cascades on the Winnipeg. He says:—"The volume of "water precipitated here is immense, all the inosculating "branches of the Winnipeg uniting some distance above the "magnificent Silver Falls. The vast torrent descends a "slope about 200 yards long, with an inclination of nearly "sixteen feet, in the form of five or six gigantic swells. "The observer may stand close to the huge heaving waves, "and watch them rush past him with astonishing velocity "and ever-changing form. Sometimes they send a thin "sheet of water over the smooth rock on which he is "standing, at the edge of the torrent; in another minute "there may be a gulf ten or fifteen feet deep, with a terrible "whirlpool raging below, between him and the crested "swell, fifty feet from the shore; suddenly the gulf is filled, "and the turbulent waters, dashing against the rocks, send "a shower of spray far and wide over the polished gneiss "which confines them."

Eleven miles, with one portage more, and the dangers of the Winnipeg were over.

We reached Fort Alexander, the appointed *rendezvous* of the regular troops, on Friday, 19th of August, having thus completed the navigation of Rainy River, Lake of the Woods, and the Winnipeg River, with twenty-six portages, in eleven days. All were in good health and spirits, and right glad that we had got so far on our journey without a serious accident of any kind occurring. It must have been gratifying to Colonel Wolseley, on his arrival in his canoe from Fort Francis, to hear the hearty cheers with which he was welcomed by the little force that had done so well.

By the 20th of August all the companies of the regulars had come in; and on Sunday afternoon, 21st August, the boats, to the number of fifty, started for Lake Winnipeg, which was reached after a row of two miles down the river. A south-west wind in our favour enabled us to make Elk Island, eighteen miles north-west from Fort Alexander, before we halted for the night. In a wonderfully short space of time the boats were hauled up on the beach, and numerous camp-fires lit, round which crowds of hardy red-capped soldiers were crowding. Before day-light next morning the bugles blew the *réveillé*, and after the usual tea and biscuit we once more started, steering south-west for the Red River.

Lake Winnipeg, an Ojibway word, signifying "dirty water," is said to occupy 8,500 square miles; its greatest length being 280 miles, and its breadth varying between 6 and 60 miles. Numerous observations have established its height above sea-level to be between 600 and 630 feet, and its elevation above Lake Superior is about 28 feet. Frequent storms, of great fury, prevail on this lake, making its navigation by small boats and canoes extremely hazardous. Lake Winnipeg is in the centre of an immense plateau. The large rivers which drain the plateau converge towards it: they flow from the east, the south, and the west, and, having mingled their waters, pass through a common channel into that great salt-lake, the Hudson's Bay.

Towards evening we arrived off the mouth of the Red River, which enters Lake Winnipeg by four or six distinct channels; the approach to the one by which we entered the river being marked out by buoys, on account of numerous sand-banks and shoals. The name of the river is described as being derived from a bloody combat between Indians, which took place on the borders of Red Lake; hence the name of the lake, which, being one of the principal tributaries of the river, gave the latter its name. Professor Hind describes the Red River as rising in Ottertail Lake, State of Minnesota. The north-east end of Ottertail Lake is in latitude 60° 24' 1", and the general course of the river is westerly, through an attractive undulating country, until it makes its great bend to the north in latitude 46° 9". It then meanders through a boundless prairie, which gradually declines in elevation, until it forms a vast level plain, elevated above the water of the river only about one and a-half to two feet, at its ordinary stage, in June. The distance of this great bend is 110 miles from Ottertail Lake, and the vast low prairie through which the river subsequently flows, in an exceedingly tortuous channel, is as level as a floor. He makes the length of Red River within British territory to be 140 miles, by the winding of the stream. It debouches into Lake Winnipeg in latitude 50° 28', longitude 96° 50'. Its most important affluents on the east side are Roseau River and German Creek. On the west side it receives, in latitude 49° 53' 24", and longitude 96° 52', the Assiniboine, or Stony River. At the confluence of these streams, Fort Garry, the capital of the settlement, and the head-quarters of the fur-trade in British America, is situated.

The scenery at the mouth of the river was extremely dreary, the swamps on both banks being covered with reeds and rushes, which are inhabited by vast numbers of ducks, geese, bittern, plover, snipe, and other descriptions of game.

Having rowed up the river for fourteen miles, we camped for the night opposite the settlement of the Swampy Indians, distant about twelve miles from Lower Fort Garry, or the Stone Fort.

During the evening, Henry Prince, the loyal chief of the tribe, with a number of his warriors, came across the river to pay a visit to the commander-in-chief. They were dressed in full paint and feathers, and were armed to the teeth. After delivering a long-winded speech, professing the utmost loyalty on the part of his tribe to the Queen, their Great Mother, the Indian magnate and his young men withdrew, having obtained, as a reward for their loyalty, a barrel of pork and a barrel of flour.

We reached the Stone Fort next morning, 23rd August, in time for breakfast, and were most hospitably and kindly entertained by Mr. Donald Smith, the Governor of the Company. As we neared the Stone Fort, the scenery became very pretty: farms and houses lined the left bank, which was rich prairie land, the right bank being thickly wooded. Crowds of Indians rushed out from their wig-wams and huts, and fired their guns in the air as a signal of welcome; the bells of the Protestant churches were rung, and every possible demonstration of welcome made by the settlers. In fact, the people seemed to understand readily that the expedition was—what it was meant to be—one of peace, not of war. They were overjoyed at the prospect of order and quietude, to which for a long time they had been total strangers.

On our departure from the Stone Fort, my company was chosen to form an advanced guard, which was to skirmish across the country, between the river and the road, to Fort Garry, 22 miles distant. It was to extend across the country for two miles, keeping well ahead of the boats, but always in communication with them by signallers. Mr. Butler, the intelligence-officer, was sent on horseback to examine the country on the right bank. He was rather unkindly described afterwards, in the report of the special correspondent of the Toronto *Globe*, as "being somewhere, "doing something for our security—we do not know "exactly what; but the idea of a man patrolling an "unknown country with a seven-shooting revolving-rifle, "gives his services great value in our eyes."

The rifleman's *forte* is certainly not riding; but whether he had ever seen a horse before, or not, was a matter of very slight consequence to Colonel Wolseley. A motley collection of horses, ponies, and mules, all more or less lame, halt, and blind, were brought in front of the astonished company, and the men told-off, as they stood in the ranks, to mount them. "Please, sir, I can't ride," said one man, imploringly. "I don't care a rap; get on to that mule!" said the colonel, pointing, as he spoke, to a half-starved-looking brute, with a foal standing beside her. The unhappy rifleman approached the animal cautiously, and watching his opportunity, clambered on to its back, and, in company with the foal, took up his position in the ranks of the Light Cavalry!

Captain McCalmont, of the 9th Lancers, whom I mentioned as having come out from England to join the expedition, was now in his glory. Up to this time the work had not agreed with him so well as he expected; but he joined the troop of skirmishers with alacrity, and, armed with a huge cudgel, proceeded to set his beast in motion. Those who had been fortunate enough to secure animals equipped with saddle and bridle were few and far between, most of the company having to put up with an old blanket tied on with a piece of string, and a rope passed through the animal's mouth to serve as reins. Carts and light buggies were provided to carry the knapsacks and the men who were not mounted.

During the day, I was sent to the bank of the river to signal some message to Colonel Wolseley, and was accompanied by Captain McCalmont and the color-sergeant. Right across the country we galloped until we were suddenly stopped by a moderately-sized drain, at which we stared with consternation. "How were our gallant steeds to get over it?" was the question. "Stand back! I'll show you the way!" shouted the young cavalry-officer; and so he did—down one side and up the other—his example being immediately followed by the remainder of the party. We all went at the ditch in true hunting style, but the horses knew better than to take it in such. A bugler, in the execution of his office, came to untimely grief that day. Being ordered by the officer in command of the skirmishers to sound some call, he halted his pony, and proceeded to do so; but at the first sound of the instrument, the pony, unaccustomed to the noise, began to kick, and the bugler shot gracefully over his head, into a ditch close by. We had orders to stop all communication between the Stone Fort and Fort Garry, and to make prisoners of every one coming from the latter place.

A gentleman connected with the Hudson's Bay Company rode from his residence, near Fort Garry, to meet the advanced guard, and, in a voice thick with emotion, bade us welcome to the territory. Having concluded his congratulatory speeches, he proposed to return, but was told he must remain where he was, and consider himself as under our care for the present. "All right, gentlemen," he said; "all right; if this is the way you treat loyally-disposed persons, I can only say I am very sorry. You have missed a good supper, though, in your readiness to consider everyone as an enemy; for on leaving my house, the last words I said to my wife were: 'Have a good supper prepared, with lots of beer and whiskey, as I shall bring back some of the officers with me!'" From the appearance of the gentleman, I should say he had had a similar repast before he started. As we rode past his residence, I thought it advisable to ascertain for myself whether he really lived there or not; and personal inspection proved that he had spoken the truth, both with regard to its locality and also the excellence of its malt-liquor. The appearance of my pony at the gate induced the other officers of the advanced guard to look for its owner, whom they found seated with his prisoner, discussing a modest quart. On leaving the house, we considerately allowed our friend to remain where he was.

When we had reached a point six miles from Fort Garry, we halted for the night. A camp was formed at the river-side, and the advanced guard stationed as an out-lying picquet on the prairie. Another out-lying picquet was stationed on the opposite side of the river. Everyone who came within the line of sentries was detained, and several of Riel's counsellors were made prisoners. One made a desperate effort to force the sentries and effect his escape, with the assistance of what he called his 2-40 horse; and it was not until he was assured that the sentries had orders to prevent such attempts in an effectual manner that he promised to desist. All through the night the rain poured down; the picquet on the prairie, drenched to the skin, were huddled round their camp-fire, with no cover of any kind to protect them from the violence of the storm.

In the morning, at six o'clock, the boats were under weigh, rowing up the river in three columns, and the advanced guard resumed its skirmishing. The people we met gave us different accounts of the intentions of the Riel party in Fort Garry: some said he would fight to the last, and that he had fifty desperate men to aid him; and others thought he would run away at the last moment. The scouts brought in word that the guns in the bastions of the Fort were pointing down the road, in the direction we were expected to approach; that ammunition and muskets had been served out to those inside, and the gates closed.

When two miles, by road, from Fort Garry, the boats were left under the charge of the *voyageurs*, and the whole force landed. The guns were fastened to carts and dragged along, and, preceded by the skirmishers, the regular portion of the expeditionary force advanced in battle-array upon Fort Garry. As we approached it, several persons were observed hurrying off across the prairie, in buggies and on horseback, and all who came near us were detained. Every moment we expected the guns to open fire upon us, as we could see their muzzles pointing in our direction.

Staff-officers were sent to see if the gates were open, and galloped back to say they were, and that Riel and his warriors had bolted. With the band playing at our head, we marched into the Fort, and formally took possession by hauling the Union-Jack up the flag-post with three cheers for the Queen, and firing a Royal salute of 21 guns from the very cannon which had been loaded for our reception. Riel and his adherents had left the Fort immediately they saw us coming over the prairie, and had crossed the river:

their breakfast was left half-finished on the tables, and the general appearance of the rooms indicated that they had made a somewhat hasty toilet.

Our men were located in quarters lately occupied by the insurgents, and the officers took possession of the private apartments of the late self-constituted governor. Colonel Wolseley was entertained by Mr. MacTavish, the officer of the Hudson's Bay Company in charge of the Fort.

Fort Garry lies in latitude 40 ° 52' N., and 96 ° 53' W. longitude, and has an elevation of 700 feet above the sea-level. It is surrounded by high stone-walls, except on the northern side where a wooden wall, formed of large logs, laid one over the other, is built. The circular towers at the angles were occupied by small cannon, and in every room in the Fort muskets and ammunition had been stored away. On the opposite side of the river lies the Roman Catholic Cathedral, with its convent and palace of the bishop. Half-a-mile from the Fort lies the village of Winnipeg, from which numbers of people soon came to bid us welcome to the settlement.

The agricultural appearance of the settlement is remarkably pleasing and attractive, from the number of farms that have been laid out on the rich pasture-land of the prairie. Wheat is the staple crop, and the grain is of excellent quality. In favorable years wheat ripens and is ready for the sickle in three months from the day of sowing, which speaks well for the fertility and abundance of the soil. Several farmers, who had lived there for a long time, assured me that they could sow on their land for fifty years. Both hay and grass are easily obtained from the prairie; and hops, peas, potatoes and turnips, all grow well. Considerable quantities of sugar are made from the ash-leaved maple on the Assiniboine. The maple, which at one time grew in considerable quantities near Sugar-Point, on the Red River, is not the true sugar-maple (*acer saccharinum*) so common in Western Canada, but another species, also furnishing an abundance of juice, from which sugar is made as far north as the Saskatchewan River. It is the ash-leaved maple (*regundo flaxinifolium*).—(General Lefroy.) Poplar, exceeding four feet in diameter, elm, exceeding three feet, and oak, of very large dimensions, are said to be the prevailing forest trees.

In the work compiled by General Lefroy, the half-breed hunters of the colony are thus described:—" These hardy " and fearless children of the prairie constitute a race to " which much interest may reasonably be attached. They are " endowed with remarkable qualities, which they derive in " great part from their Indian descent, softened and improved " by the admixture of the European element. It is, however, " much to be regretted, that, from the singular necessities of " their position, many of them are fast subsiding into the " primitive Indian state. Naturally improvident, and " perhaps indolent, they prefer the wild life of the prairies " to the tamer duties of a settled home: this is the character " of the majority, and belongs more to those of French " descent than of Scotch or English origin. The improvidence " of many of the half-breeds is remarkable, and many of " them can be regarded in no other light than men slowly " subjecting themselves to a process of degradation, by " which they approach nearer and nearer to Indian habits " and character, relinquishing the civilized but to them " unrequited pursuit of agriculture for the wild excitement " and precarious independence of a hunter's life. The half-" breed hunters, with their splendid organization when on " the prairies; their matchless power for providing themselves " with all necessary wants for many months together, and " now since a trade with the Americans has sprung up, if " they choose for years; their perfect knowledge of the " country, and their full appreciation and enjoyment of a " home in the prairie wilds, winter or summer, would " render them a very formidable enemy in case of disturbance " or open rebellion against constituted authorities.

" The half-breed hunters of Red River could pass into the " open prairies at a day's notice, and find themselves

" perfectly at home and secure, where white men, not " accustomed to such a life, would soon become powerless " against them, and exposed to continued peril."

Bishop Taché, in his sketch of the North-West of America, thus describes the prairie:—" The poor colonist who has " labored at clearing the dense forest-land of Canada, who " can only plant his land after a terrible struggle with the " giants that cover it, and after having dug it out to great " depths in order to extract innumerable enormous roots—he, " no doubt, naturally conceives a hatred for forest-land. He " has expended too much labour and exhausted too much of " his resources to believe in the superiority of this kind of " land. It appears to him that open country, where nothing " more is necessary, so to speak, than to put the plough in " the ground, is a fortunate country. From this point of " view, prairie has an unquestionable advantage; but as " nothing here below is perfect, the advantage has its " disheartening compensation in a very great scarcity of " timber and firewood. Time, far from bringing a remedy, " increases the evil. Fires, which destroy even forests, rob " the prairies of such small advantages as they may have in " this respect. I have crossed well-wooded districts, where " a few years afterwards I have suffered from cold, not " knowing wherewith to supply the smallest fire. The " conflagrations are more numerous in proportion to " the increase of travellers. They are becoming more " difficult to check as they find fuel in greater abundance, " and more combustible on the scene of their last " depredation.

" To the buffalo-hunter the prairie is a country without " equal. Winter and summer—there is his empire; there " he finds true happiness in urging his swift steed in pursuit " of prey, until recently so easy; it is there that, without " obstacle, and, so to speak, without labor, he lays out roads, " bounds over space, and enjoys a spectacle often grand, " although a little monotonous. Seen in the flower-season, "the prairie is very beautiful, for its verdure-covered "ground is quite enamelled with different colors. It is a rich "carpet, of which the various tints seem to have been arranged "by the hands of an artist; it is a sea which, on the least "breath, undulates its scented waves. The plain, sometimes "so uniform as to shew an apparently artificial horizon, "suddenly changes into rolling prairie. Its beauty then "increases; a thousand little hills now raise themselves here "and there, and, by their almost regular variety, give the "idea of waves upon the ocean in the midst of a great "storm. It appears as if the powerful hand of the Ruler of "seas, mocking the fury of the waves, had seized them at "the instant of their rising, and, by a peremptory order, "changed them into solid land. In many directions, erratic "stumps, seen on the top of downs or hillocks, appear in "the distance like the petrified spray of foaming waves. "Elsewhere the prairie is planted with clumps of trees, and "dotted with lakes as pleasing as they are various in form. "Here are basins which one would say were the reservoirs "of great rivers, and of which the sides carry visible marks "of the levels once assigned by the Supreme Artist to these "dried-up ponds. Excepting the wild and rugged beauty "of large mountains; excepting the view of a great sheet "of water bathing a beautiful road-stead, and excepting all "natural beauty improved by the art, it is difficult to "imagine anything more beautiful, or, at least, prettier and "more lovely, than are some parts of the rolling prairie."

The Indians who frequent the Red River Settlement are composed, principally, of three tribes, namely: the Saulteaux, or Chippeways; the Maskegons, or Swampies; and the Crees. The Saulteaux derive their name from the Sault Ste. Marie, whence they originally came. They are fine, strong men, and fond of warfare. The Swampies are different: they are gentle, averse to bloodshed, easy to influence, and less superstitious. The Cree Indians consist of two tribes: the Plain Crees—warriors, and living in camps; and the Forest Crees—humble hunters and fishermen, leading an isolated life. These two tribes speak one language. On the prairies, towards the Rocky Mountains, those fearful savages, the Sioux and the Blackfeet, are met with.

The regular troops remained at Fort Garry until August 29th, on which date the first detachment left the settlement, and proceeded home by the same route as on the advance. By the 3rd of September the militia regiments had arrived, and all the regulars were on the return journey. One company of the 60th Rifles was sent across the country to the north-west angle of the Lake of the Woods, and on arrival there took over the boats of Captain Scott's company of the Ontario militia, which had been sent there from Fort Francis.

The militia had done their work well, and had shewn that although most of them had started on the expedition as raw recruits, the pluck and spirit they were possessed of enabled them to do their share as creditably as the others. The future army of Canada will, indeed, be well supplied if it can number men in its ranks equal to the militia of the Red River Expedition.

In conclusion, I cannot do better than quote the General Orders published at Fort Garry by Colonel Wolseley:

"FIELD FORCE—MORNING ORDER.

"*To the Regular Troops of the Red River Expeditionary Force:*

"I cannot permit Colonel Feilden and you to start upon your return journey to Canada without thanking you for having enabled me to carry out the Lieutenant-General's orders so successfully.

"You have endured excessive fatigue in the performance of a service that for its arduous nature will bear comparison with any previous Military Expedition. In coming here from Prince Arthur's Landing, you have traversed a distance of upwards of 600 miles. Your labours began with those common at the outset of all campaigns—namely, road-making and the construction of defensive works. Then followed the arduous duty of taking the boats up a height of 800 feet, along 50 miles of river full of rapids and numerous portages. From the time you left Shebandowan Lake until Fort Garry was reached, your labour at the oar has been incessant from day-break to dark every day. Forty-seven portages were got over, entailing the unparalleled exertion of carrying the boats, guns, ammunition, stores, and provisions, over a total distance of upwards of 15,000 yards. It may be said that the whole journey has been made through a wilderness, where, as no supplies of any sort were to be had, everything had to be taken with you in the boats. I have throughout viewed with pleasure the manner in which the officers have vied with their men in carrying heavy loads. I feel proud of being in command of officers who so well know how to set a good example, and of men who evince such eagerness in following it. Rain, too, has fallen upon 45 days out of the 94 that have passed by since we landed at Thunder Bay, and upon many occasions officers and men have been wet for days together. There has not been the slightest murmur of discontent heard from anyone. It may be confidently asserted that no force has ever had to endure more continuous labour; and it may be as truthfully said that no men on service have ever been better behaved, or more cheerful, under the trials arising from exposure to inclement weather, excessive fatigue, and the annoyance caused by flies. There has been a total absence of crime amongst you during your advance to Fort Garry; and I feel confident that your conduct during the return journey will be as creditable to you in every respect.

" The leaders of the banditti, who recently oppressed Her Majesty's loyal subjects in the Red River Settlement, having fled as you advanced upon the Fort, leaving their guns and a large quantity of arms and ammunition behind them, the primary object of the Expedition has been peaceably accomplished. Although you have not, therefore, had an opportunity of gaining glory, you can carry back with you, into the daily routine of garrison life, the conviction that you have done good service to the State; and have proved that no extent of intervening wilderness, no matter how great may be its difficulties, whether by land or water, can enable men to commit murder or to rebel against Her Majesty's authority with impunity.

" FORT GARRY, *August* 28*th*, 1870."

The return journey was, as the Colonel commanding predicted, successfully accomplished: the first troops reached Prince Arthur's Landing on September 26th, and the last on October 6th; and the whole were in Montreal by October 16th. The object of the Expedition had been accomplished, and order and tranquility restored in the Red River Settlement.

PAPER VI.—RECREATIONS IN HISTORY.

BY THE LORD BISHOP OF QUEBEC.

(Read before the Society March 15th, 1871.)

I AM afraid that the title of my paper is, in a measure, misleading. I am afraid that I may be considered to have held out the hope or the promise of recreation to you; whereas, all that I really propose is to tell you something about the way in which I procure my own recreation. This is, in fact, all that I can do; and ever since our late president did me the honour to ask me to read a paper before the Society, I have been casting about for a subject, without much success. The fact is, that mine has been but an old-fashioned education, such as was to be had before useful knowledge was invented; and lecturing comes hard to me. However, I have undertaken to read a paper before you; and in fulfilment of my promise, I will now proceed to sketch the manner in which I have been used to seek my recreation in history.

It has always given me more delight to catch my glimpses of history by peering through the cracks and chinks of the material than I could obtain by looking through the window held open by the historical showman, and, I think, as much instruction. In plain words, I find more pleasure, and more success, in calling up the life of the past, by studying such bits of contemporary evidence as are within my reach, than by passively absorbing the narrative of compilers. Glimpses of history are, of course, all that most of us in this way can get; for bits of evidence are all that we have the means of investigating. A thorough knowledge of history we can only have by a thorough knowledge of all the contemporary sources of history; and this belongs to the opportunities and the abilities of a few. Very thankful we are, and must be, to read their fine and flowing tale; but the storing-up of this in the memory is not a knowledge of history. We cannot be sure of the facts till we have read at least the writings of two historians taking opposite sides—or, at any rate, till the narrative we follow has been subjected to keen and competent criticism. And the facts, when we get them, uncoloured by the writer's opinions of motives, characters, and causes, are but bare and meagre husks. The colouring and complexion—the flesh and blood with which Macaulay or Hume clothes this lifeless skeleton—the informing-spirit which they breathe into it,—all this is the creation of their own minds—the result of their own inferences—the reflection of their own capacities, tastes, and predilections. How much so, the different ways in which different men of equal ability and equal honesty represent the same events, or course of events, will sufficiently prove. Their narratives are delightful and instructive so long as they are taken for what they are; they are misleading and deceptive when they are taken for what they are not. Now, we are not all qualified to pronounce upon the accuracy of these men in all the particulars they relate; but we can qualify ourselves to read their works without having our wits run away with. And before going further, I will point out how necessary it is to be on our guard against errors of fact in our most trusted historians.

Macaulay, as is well known, painted a not very flattering portrait of William Penn. This he founded, in great part, upon some discreditable transactions respecting the sale of pardons after Monmouth's rebellion. These, at any rate, were the facts, or seeming facts, which threw the blackest shades upon Penn's fame, and seemed to justify, beyond cavil, the historian's disparaging estimate of the man. But it turns out that the real offender was another man—one George Penn. This, however, is by no means the worst of the matter. It appears to have been Sir James Mackintosh who made the mistake; and Macaulay, taking his blunder without verification, adopted it as his own. And this is what, more or less, discredits all historians—second-hand information doing duty for original research.

I cannot at present lay my hand upon my authority for this correction; but I well remember seeing it in the criticisms and discussions which followed upon the publication of Macaulay's history. I believe Macaulay never owned that he was wrong; but that does not make him right.

I will now take another case, in which the same historian's bias and predilection made him—not suppress anything, certainly, but—so state and paint some things as to make them not very visible. Macaulay adored William and hated James. Now, there is the same blemish in the life of each. Each was married to a young and beautiful wife, and each neglected her; and Macaulay tells the fact in regard to each. But I will venture to say, that everybody who has read his history has James's fault ringing in his ears; but that most, if they have not been reminded from other sources, have forgotten all about William's failing. So much for what a popular writer calls "the way of putting things."

And, if I do not weary you with these animadversions, I will now take another admirable writer, who has established for himself a name of great authority, by his brilliance of style and his reputation for research, and shew him in his weakness. But before I go on to criticise his accuracy and reliability, I must, in passing, since I have mentioned it, say just one word regarding the style of Mr. Froude. It is not faultless; but it is beautiful—far better, in my judgment, than that of Macaulay, which, masterly as it is, has, with all its unvarying clearness and force, an artificial and rhetorical ring that—lowers it, shall I say?—or elevates it into mannerism. An admirable manner it is, no doubt, but still a manner, something unique. If you or I were to try to write like Macaulay, we should seem ridiculous. If we could write like Froude, it would only seem that we wrote uncommonly well. That is his charm, his naturalness. There is no affectation of fine writing, though there is plenty of it. Always the style rises and falls with spontaneous flow. His eloquence comes of the passionate feeling which the course of his narrative has kindled within him; and when he is picturesque, it is because the scenes he describes rise vividly before him. When his diction is most polished, you can see no mark of the file. What could excel, for instance, the felicitous touch and graceful keeping of his picture of the attack upon Leith, where, after telling the story of the unsuccessful assault, he concentrates his description into a single image of matchless beauty, and, coupling to it a touching incident, holds it out before us, luminous in the light of a dramatic sympathy? A few lines—a couple of sentences—and the scene is imprinted upon the mind for ever:

"The dying Mary of Lorraine had been carried from her "bed to the walls of the castle, to watch the fight. As the "sun rose out of the Forth, she saw the English columns "surge like the sea-waves against the granite ramparts, and, "like the sea-waves, fall shattered into spray."

But this by the way. What I intended, when I brought in Froude's name, was to criticise his accuracy.

In his seventh volume, page 479, he says:—"On the 12th "of January parliament opened, and with it the first "convocation of the English Church. The sermon at St. "Paul's was preached by Nowell, the Dean; that at "Westminster by Day, the Provost of Eton. The subject of "both was the same, the propriety of 'killing the caged "wolves'—that is to say, the Catholic bishops in the Tower, "with the least possible delay."

In a note he gives his authority, and adds, as from the melancholy musings of his own saddened mind: "It is mournful "to remember that Nowell was the author of the English "Church Catechism in its present form." I read this with astonishment. How anybody could call Nowell the author of the English Church Catechism in its present form, it passed the powers of my imagination to conceive. "In its present form":

there was an air of preciseness and authority about that phrase that perplexed me. That Nowell wrote a Catechism, I well knew. But that was a very different affair. It is a long treatise, written in Latin, containing 125 closely-printed octavo pages—which, certainly, is not the Church of England Catechism in its present form. The source of the error was not, however, far to seek. The author of the English Catechism in its present form was a Dean of St. Paul's—Dean Overall—Nowell's successor, who wrote the last part relating to the sacraments. Here was the mistake: Nowell, Dean of St. Paul's, wrote a catechism; a Dean of St. Paul's is the author of the English Church Catechism in its present form; therefore, Nowell is the author of the English Church Catechism in its present form. This is the style of reasoning called by somebody—Locke, I think—"seeing a little, presuming a great deal, and jumping to a conclusion." The mistake might have been pardonable in some men; but in one of Mr. Froude's antecedents, ignorance of such matters did seem strange. It was not, however, till some time after that I fell upon a passage throwing light upon the matter. Consulting, one day, Shepherd's "Commentary on the Common Prayer," I found that Gilpin, in his lectures, had spoken of Nowell's book—confounding it, apparently, with older editions of the Church Catechism—as our Catechism, "nearly in its present form." Froude, writing from his recollection of this or some similar statement—this very one, I should think—drops out the "nearly," and says, "in its present form"—absolutely evacuating the looser statement of whatever ground-work of truth it may have contained, and incorporating his own residuum of pure, unmitigated error into a sigh for human frailty, which is, under the circumstances, touching;—a slight and unimportant matter this, in itself, but significant as revealing the historian's habits of composition and the value of his assertions.

These instances illustrate, I think, sufficiently, the necessity of some verifying process to which historical compilations may be subjected. One, and, of course, a very valuable one, is the sieve of hostile criticism. We should hear the other side. The plan I wish to speak of is not so extensive and exhaustive; but, so far as it goes, it is a still more satisfactory one.

And in order to open it, let me illustrate for a moment from another branch of knowledge. Suppose a man to master the best manuals of geology—to be thoroughly conversant with all its accepted facts and principles;—suppose him to be able and accustomed to follow intelligently the reasoning of the theorists and investigators, who, from time to time, propound new views and fresh applications of the science: well, he has that in his head which is a great deal better than emptiness; but, still, it is only information; it is not knowledge—at least it is other people's knowledge, not his own. But suppose that he is used to go into the quarries, and along the rocks, hammer in hand, and to search and to see whether these things be so: he will then get a knowledge of a different sort. So far as he is an original geologist, he will know these things as he could not know them from books; and he will get a higher and better standing-ground from which to view the information which he receives from the researches of others. His mind, so stimulated and educated, will develope a faculty which will transmute information into knowledge.

And, here, I must illustrate my illustration:—In the familiar process of brewing, we know that the barley must be converted into sugar. This is done in the malting. All the farina, however, in the barley, is not in malting converted into sugar; but a certain substance, called diastase, is evolved, which, at a certain temperature, will convert the rest of the farina—and, for that matter, a large quantity of unmalted barley besides.

Now, this transmuting power is just what original investigation developes in the mind. A mental diastase is evolved. The more original research there is the better; but even a little goes beyond itself in the mental habits it creates, and has a very mellowing effect upon the information which we obtain from the observations and reasonings of others. And as in science, so in history. By questioning and sifting the monuments and remains of other times for ourselves—the ruined walls—the incidental and undesigned notices of literature—any fragments of contemporary thought and activity—we can call up some portion of the past; and this knowledge, however scanty, will be true and real knowledge, and will help us, moreover, to read between the lines of the narrative or compilation we may have in hand.

Contemporary historians, such as Clarendon or Thucydides, will, of course, be seized with avidity by one willing to know the times of which they treat, when they are to be had. And for their command of current knowledge, and their presentation of society in its outward aspects, they are invaluable. They may have a true and penetrating insight into its inner spirit—into the characters of men, and the tendencies of events; but they may not. The influences of the age are upon them; and they may view men and measures through the discoloured and distorting medium of party feeling. Still, even in its defects, if intelligently studied, contemporary literature is always instructive; and, until we have walked some way in its light, we can have no conception "how far that little candle throws his beams." When I read Livy, I read a romance; when I read Niebuhr, I read another; but when I get hold of the satires of Horace, or the letters of Cicero, then old Rome lives around me. I am amongst the men themselves. Their ambition, their successes and failures, their public sentiment, and their domestic manners, disclose themselves with all the charm of truth and unconsciousness in every page. I am present at the Roman gentleman's levee at early dawn. I attend him to the forum. I mark the humours of the sovereign people. I see the knots of bankers and men of business discussing their affairs; witness the trial of a pro-consul for the oppression of a province; or hear Cicero address the people for the promulgation of a law. Or, turning in another direction, I stumble against Horace taking his customary stroll along Holy-street. I accompany him, as he saunters through the fruit-market, or looks on at the tricks of the jugglers; or I listen to his chat about the weather and the prize-fight, as he rides in his patron's carriage. In the afternoon and evening I sit with these people at their entertainments; watch their enjoyments; and listen to their jokes. The busy and the idle, rulers of men and unappreciated poets, pedants, and epicures, all pass before me; and I see them with my own eyes, and hear them with my own ears, as I can see them with no other man's eyes, and hear them with no other man's ears—see them in their undress—hear, not the sonorous roll only of the orator's flowing periods, decorous with sentiment suitable for the occasion; but hear him brag of his performance afterwards to his friend.

And something more than mere amusement comes of this poring over these old illustrations of by-gone manners. There is a collection extant of some 122 letters, mostly very short, which passed between Pliny and the Emperor Trajan, relating to the administration of the province over which Pliny presided. One of these gives an outside view of Christians and the Christian religion, very interesting to us.

Though he felt bound to punish the Christians as an illegal sect, Pliny, after careful enquiry, confesses that the sum of their offence was, "that on a stated day they were accustomed to assemble before day-light, and to sing among themselves, verse and verse about, a hymn to Christ as to God; and to bind themselves by an oath (sacrament) not to the commission of any crime, but that they would be guilty of no robbery, no breach of the marriage vow, no breach of trust; after which their custom was to disperse, and again to meet, in order to partake of a common and harmless meal." To us, who can read between the lines, how much that simple statement means. And then the wide extent to which Christianity had spread, not in cities only, but into villages and country places, is noticed. And that old letter stands an imperishable monument of the purity of the early Christians' lives, and an unassailable witness to the broad simple outlines of their faith and worship.

Now, this home-brewed history, which we extract for ourselves, is, I maintain, the very best that we can have. And we can have it in abundance. Not even the re-opened streets and houses of Pompeii, where we look in upon the habitations of the old Romans just as they left them, nearly 1800 years ago, give a more adequate picture of old Roman life than that which rises to the eye, which has been trained by observation and thought to look with discriminating and constructive vision upon the letters, the poems, the fragments and remains of the old Roman mind.

Since I have mentioned Pompeii, I must say a word about it. Very much can be seen there, no doubt; and those are fortunate who can see it. There is to be seen the eating house, just as it was left, with its marble slab, on which the smoking meats were exposed; its iron cooking-stove; its jar of wine, which had been 32 years in bottle; its oven, containing 83 loaves, just like the modern double loaf, scored at the top, and so on. There are still the election-placards on the walls. "Vote for Capella!" writes one enthusiastic supporter of that gentleman; and another, of the opposite party, I suppose, curiously chronicles the antiquity of log-rolling. One of those incorruptible electors is asked to vote for Sabinus, and Sabinus will vote for him. There, too, is the inn with the sign of the elephant. And there is his Greek alphabet scratched on the wall by the small boy, who could not lift his little hand above three feet from the ground.

And here is an affecting picture, which I take, as I do all this account of Pompeii, from the "Quarterly Review," April, 1864:

"At some distance from this group lay a third woman. She appears to have been about twenty-five years of age, and to have belonged to a better class than the other two. On one of her fingers were two silver rings, and her garments were of a finer texture. Her linen head-dress, falling over her shoulders, like that of a matron in a Roman statue, can still be distinguished. She had fallen on her side, overcome by the heat and gases; but a terrible struggle seems to have preceded her last agony: one arm is raised in despair; the hands are clenched convulsively. Her garments are gathered up on one side, leaving exposed a limb of beautiful shape. So perfect a mould of it has been formed by the soft and yielding mud, that the cast would seem to be taken from an exquisite work of Greek art. She had fled with her little treasure, which lay scattered around her—two silver cups, a few jewels, and some dozen silver coins. Nor had she, like a good housewife, forgotten her keys—after having probably locked up her stores before seeking to escape. They were found by her side."

Well,

"*Non cuivis homini contingit adire Corinthum.*"

We cannot all see these things for ourselves. Nor can we see the tombs at Thebes, where the old Egyptian life is depicted with such wonderful fidelity; but the remains of antique life, which are entombed in literature, are more accessible. And, though I am lingering too long, perhaps, upon this subject, there are a couple of letters from that same Pliny, whom I have before quoted, to his friend Tacitus, the historian, descriptive of the eruption of Mount Vesuvius, by which Pompeii was destroyed, to which, before passing to other matters, I should like to refer, both because the letters are so interesting in themselves and because they afford so excellent an illustration of the historical value of private letters and contemporary evidence, upon which I am insisting. In them we see the event with the eyes of an eye-witness. Pliny was at Misenum, the north-western extremity of the Bay of Naples, with his uncle, Pliny the naturalist, when, on the 24th of August, early in the afternoon, his mother came to tell his uncle, who was lying down and reading, that a strange appearance was visible in the sky. The old man called for his shoes, and ascended an eminence, from whence he could obtain a better view of the phenomenon. He saw a cloud, in shape like a pine-tree, with its lofty spiral trunk and drooping branches—brilliantly white at first, and then changing to a stained and dirty colour. The man of science, with his thirst for observation, would make a closer inspection. He ordered out a light, swift craft, to cross the bay, and offered to take his nephew, the writer, with him; but he, wishing to continue some study in which he was engaged, preferred to remain at Misenum; and the old man went off, with his note-book in his hand. He landed at the house of a friend, near Stabiæ, where the danger, though imminent, was not immediate. The quiet calm with which he took his dinner and lay down to rest, reassured the panic-stricken household. After he had been sleeping some time, the ashes fell so thickly that if he had not been roused from his slumber the passages leading to the room where he slept would have been blocked up, and his escape cut off. All now sought the open air. Though still daylight elsewhere, it was dark as night with them. They walked toward the shore; but the suffocating vapours were insupportable. The old man lay for some time on a piece of refuse sail-cloth. The rest fled. He called, more than once, for cold water, and drank. Then he tried to rise, leaning on two slave-boys; but again he fell. And after three days, during which the eruption appears to have continued, his body was found in the quiet attitude rather of repose than of death.

In the meanwhile, his nephew, then in his eighteenth year, continued at Misenum. In the course of time, the danger approached. The island of Capreæ could no longer be seen, and the promontory at Misenum itself was hidden. Then all fled. But the blackness, more than of night, overtook them. The trampling rush of the terror-stricken crowd, the shrieking of the women, the wailing of the children, and the shouting of the men, the confusion and the sorrow, are all told to the life. And in the midst of it all, we see the touching picture of the mother urging her son to escape, in the strength of his youth, and leave her to die alone; and the son, steadfast not to live unless she lived, taking her by the hand and leading her, still chiding, because he will not leave her and save himself, with gentle force, unwillingly, away.

To pass now to our own history. In the pages of Froissart (of whom there is an admirable copy in your library, in the quaint translation of Lord Berners, made in the time of Henry VII., appropriately antique in its diction, but not too much so to be easily read,) we have our ancestors of the time of Edward III. brought before us, in all the pomp of their chivalry, by one who had lived amongst them. Those enchanting stories constitute one of the most precious monuments of the middle ages; and by the perusal of them, we can compose our own historical novels, better and truer, for ourselves at least, than any that the most gifted genius can write for us.

A picture, too, has been left us of the same time, or a little later, by another great painter of contemporary manners. Chaucer, in the compass of some 900 lines, which form the prologue to his Canterbury tales, has left us what may be called a photograph of the 14th century. The knight, the squire, the monk, the nun, the begging friar, the serjeant at the law and the doctor of physic, the Oxford scholar and the poor parson of a town, with the shipman, the ploughman, and mine host of the Tabard, in Southwark, where the company assembled before they set out on their pilgrimage to the shrine of Thomas-à-Becket, are all introduced to us with minute and felicitous descriptive touches. It is impossible to pass through this gallery of portraits without being convinced that they were drawn from the life, and that they were intended to constitute a picture of society at the time. As they ride together, we see the mingling of many ranks; and as we listen to their talk, we note how they bore themselves one to another. *Old* England lives, moves, and speaks around us.

If we now come down into the 15th century, another view of our forefathers and their fashions is opened to us in the Paston Letters. These extend over the last half of the 15th century, being a family correspondence; and, in many significant facts, they disclose the manners of the day; not the least striking feature in which is the strange absence or quiescence of the law. And, indeed, from what we do see of the law, its absence was perhaps as beneficial as its presence. It seems to have been a not unusual practice to push legal processes in a secret and clandestine manner, without letting the parties most concerned have any knowledge of the same till the case had gone against them. And there were strange ways, too, for men of influence to avoid the inconvenience of an adverse decision. Here is an extract from a letter dated 1440:

"Be ye remembered that an Esquire of Suffolk, called "John Lyston, hath recovered in assize of novel dissension "700 marks (£466 13s. 4d.) in damages against Sir Robert "Wingfield."

And what did Sir Robert do? Pay it? Not a bit.

"In avoidance of the payment of the said 700 marks, the "said Sir Robert Wingfield, subtely, hath outlawed the said "John Lyston in Nottinghamshire; by the virtue of which "outlawry, all manner of chattel to the said John Lyston "appertaining are accrued to the King. And anon, as soon "as the said outlawry was certified, my Lord-Treasurer

“ granted the said 700 marks to my Lord of Norfolk, for the “ arrears of his pay whilst he was in Scotland ; and according “ to this assignment aforesaid, tallies were delivered. And “ my Lord of Norfolk hath released the same 700 marks to “ Sir Robert Wingfield.”

It will sufficiently appear from this, I think, that our ancestors were at least equal to their posterity in the manipulation of a job.

These Pastons had a dispute with my Lord of Norfolk, in regard to the possession of a house and estate. The Pastons were in possession, and Norfolk's men laid regular siege to the house. His mother writes during the siege to her eldest son, to stir him up to a sense of his duties as head of the family.

“ I greet you well,” she writes, “ letting you weet that your “ brother and his fellowship stand in great jeopardy at Caister, “ and lack victuals, and Daubeney and Berney (two friends “ who had joined him in the defence) be dead, and divers “ others greatly hurt, and they fail gunpowder and arrows, “ and the place is sore broken with guns of the other party ; “ so that, unless they have hasty help, they be like to lose both “ their lives and the place, to the greatest rebuke to you that “ ever came to any gentleman, for every man in this country “ marvelleth that ye suffer them to be so long in great “ jeopardy without help or other remedy.”

It appears, from the answer to this letter, that impecuniosity was an affliction which our forefathers suffered in common with ourselves. Indeed, bad as times are, they were in worse case ; for here is a gentleman attending the court, and associating intimately with the first of the land, carrying on a little private war on his own account, who writes :—“ By my troth, I have but ten shillings, and wot not where to have more ; and, moreover, I have been ten times in like case, or worse, within these ten weeks.” Norfolk's men ultimately got possession of the place. These are by no means the most striking passages of the letters; but as I am now unable to refer to the book, I have been obliged to borrow the first extracts that came to hand.

A series of the private letters of a considerable family, extending over 40 years, must needs open up many interesting views of domestic life and of public affairs; but these incidental and undesigned revelations come upon us from all sides, when we have the habit of observing them. Even sermons tell us a good deal. Those of Latimer teem with illustrations of the state and manners of his time. And here is a picture of Cambridge life, in a sermon preached before the University (portions of which are preserved in Strype's memorials), by Thomas Lever, fellow of St. John's College, in 1550, in considerable contrast to what is to be observed in that seat of learning now:

"There be divers there," he says, "which rise daily about four or five of the clock in the morning; and from five to six of the clock use common prayer with an exhortation of God's Word in a common chapel; and from six until ten of the clock use either private study or common lectures. At ten of the clock they go to dinner, whereas they be content with a penny-piece of beef among four, having a few pottage made of the broth of the same beef, with salt and oatmeal, and nothing else. After this slender diet, they be either teaching or learning till five of the clock in the evening, wheneas they have a supper not much better than their dinner. Immediately after which they go either to reasoning in problems or to some other study, until it be nine or ten of the clock; and then, being without fires, are fain to walk or run up and down half an hour to get a heat on their feet, when they go to bed." They have changed all that now.

Coming down a little further, we encounter Bacon's mother, who was a learned, pious, shrewd woman; and she writes a capital letter. A capital manager she was, and very ready to manage—a little too much so, perhaps—sending up to her sons from Gorhambury barrels of beer, and good advice, with an occasional dash of sarcasm. There is a vigour and a downrightness in her letters—a worldly wisdom, coupled with womanly piety, which make them always of the raciest. And when we remember that she was the widow of the Lord-Keeper, Sir Nicholas Bacon, and that her sister was the wife of the great Burleigh, we understand that as we read we are entering into more familiar acquaintance with the great people of a great period. Here is a specimen of the way in which she writes to her sons, who seem to have been inclined to cut a dash:—"I am sorry your brother and you charge yourselves with superfluous horses. The wise will but laugh at you both; being but trouble, besides your debts, long journeys, and private persons. Earls be earls. Your vain man, straitly, by his sloth, and proud, quarrel-picking conditions, sets all your house at Redbourn out of quiet order, by general complaints, as I hear. Lately, young Morer was smote in the eye by him. And I pray God you hear not of some mischief by him. But my sons have no judgment." And here is more advice of a different sort: "The two countess sisters will neighbor you; both ladies that fear God and love His word—indeed zealously, specially the younger sister. Yet, upon advice, and some experience, I would earnestly counsel you to be wary and circumspect, and not to be too open, nor willing to prolong speech with the Countess Warwick. She, after her father's fashion, will search and sound, and lay up with diligence, marking things which seem not courtly; and she is near the Queen, and follows her father's example too much in that." And these letters are none the more interesting now, from the frequent injunctions with which they are interspersed, such as

"Burn, I pray, but read well first."

Descending, now, to the next generation. One of the best of letter-writers was James Howell, who was born in 1596 and died in 1666—though the fact that his epistles were designed for publication, robs them of a good part of the charm they would otherwise have. He was one of 15 children, the son of a Welsh clergyman, educated at Oxford; engaged abroad in commercial pursuits and in public employment; going secretary to Lord Leicester in Denmark; made clerk of the council in 1641; imprisoned in the fleet in 1643, as a malignant; and being, as he was, in constant correspondence with men of all ranks, he necessarily reflects in his letters the times in which he lived; and this he does with an ease, wit, and skill, which endow his epistles with an enduring fascination. I have given away my copy, which I used for several years, and am, therefore, unable to make any extracts; but I can assure you that there is good history in his book, and pleasant reading. And there is no lack of writers, easily accessible, who depict these times from their own observation.

The England of Charles I., the Commonwealth, and the Restoration, is nowhere better seen (that part of it, at least, which is shewn) than in the life of Anthony à Wood, the Oxford antiquary, written by himself. I had intended to give some extracts, descriptive of the fighting between the Cavaliers and Roundheads, some of which Wood saw with his own eyes, when a boy at school, at Thame, in Bucks, and of the state of society in Oxford in his day; but I must put these aside, and confine myself to one single extract, which will serve to shew how much more a simple, unadorned, but very significant fact, is to be learned from such books than from the historian's narrative; and how much more plainly facts speak for themselves than do the generalizations and reflections men make upon them. When the war between Charles and the Parliament began, "upon the first news at Oxford that the armies were going to fight, Mr. Wood's eldest brother, Thomas, left his gown at the town's end, ran to Edgehill, did his Majesty good service, returned on horseback, well accoutred, and afterwards was made an officer in the king's army." After the final defeat of the king's party he returned to Oxford, where, being involved in a projected royalist rising, which was discovered, he fled for his life, and joined Cromwell's army in Ireland, in which he rose to the rank of major. The atrocities perpetrated by this army in Ireland are well remembered by the Irish. And I do not say that English historians pass them over; but a generalized condemnation of undue severity, or a lament over the license of war, does not shew us the thing, or make us feel as we ought to feel about it. This brother of Anthony à Wood was present at the taking of Drogheda; and it is worth our while to see if just a single incident that he relates does not throw more light upon the matter than we get from our histories. In the voluminous pictorial history of England thus much is said about it:

> "Drogheda was stormed on the 11th of September, Cromwell
> " himself fighting in the breach. In the civil war in England
> " he and his men had ever been merciful to the vanquished;
> " but here, and everywhere in Ireland, little or no mercy was
> " shewn to the Papists or idolaters."

Hume says something more. After describing the assault, he goes on to add:—" The town was taken sword in hand; " and orders being issued to give no quarter, a cruel " slaughter was made of the garrison. Even a few who " were saved by the soldiers, satiated with blood, were next " day miserably butchered by order of the General." Bad enough, that. But you observe that only the garrison, the fighting men, are mentioned;—not a hint is there that any of the inhabitants were ill-treated.

Now, listen to what Thomas Wood told his mother and his brother:—"He told them that when they were to make their way up to the lofts and galleries in the church, and up to the town, where the enemy had fled, each of the assailants would take up a child and use as a buckler of defence when they ascended the steps, to keep themselves from being shot or brained. After they had killed all in the church, they went into the vaults underneath, where all the flower and choicest of the women and ladies had hid themselves. One of these—a most handsome virgin, arrai'd in costly and gorgeous apparel—kneeled down to Thomas Wood with tears and prayers to save her life; and being strucken with a profound pity, he took her under his arm, and went with her out of the church, with intentions to put her over the works to shift for herself; but a soldier perceiving his intentions, he ran his sword through her body; whereupon Mr. Wood, seeing her gasping, took away her money, jewels &c., &c., and flung her down over the works." That is the sort of thing that has made Ireland a difficult country to govern.

"The evil that men do lives after them."

I fully intended, when I began to write this paper, to have been rather large in my illustrations from the diaries and correspondence of Eveleyn, where the ways and feelings of the time are so finely portrayed; but above all, from the diary of the vain, the shrewd, the honest, the naive, the ever-amusing, the incomparable Samuel Pepys, to open whose book is to do nothing less than to step back into the times of Charles and James, and, unseen, ourselves to mingle with the motley crowd; but I have left myself no time for this. And it is the less needed, as the book is so popular and so accessible.

The literature of the stage, too, and of fiction, which has for its office to "catch the living manners as they rise," would be of great service to one endeavouring to reproduce the past. It is only to name the name of Mr. Justice Shallow, and country life in England 300 years ago comes back at the sound. It is put further back in the play; but the life depicted is the life that Shakespeare saw. It comes back in the conversation of country gentlemen, and their talk of sheep and of bullocks and of rural sports. They re-appear before us—the silly squire with his weak and wicked boastings of youthful follies, of which, if they were not lies, he ought to have been ashamed, and his moral prattle, and his justicing; and his pippin of his own grafting; and his cousin, the neighbour justice, whose son William is at Oxford still, to his cost; and old Double dead at last—old Double, who drew so good a bow, and of whose skill all the country-side was proud. And, to take another example, Lord Foppington, when he announces that "to mind the inside of a book is to entertain oneself with the forced products of another man's brain,—now, I think, a man of quality and breeding may be much amused with the natural sprouts of his own," serves to remind us that the race of puppies is perennial.

And there is another book, too, of infinite value for building up the structure of a bygone age, to which, though space will not permit me to illustrate from it, I must refer you—and that is "*Howell's State Trials.*" I do not know whether it is, but it certainly ought to be, in your library. Always the records and incidents of courts of justice preserve authentic monuments and enduring fragments of the past. Go back as far as we will, if we can but get into court we are transported into the very times of which we read. When we stand within the charmed circle where Demosthenes pleads for the honours and immunities of his friend, as he calls his evidence and cites his authorities, we are in the very tide and flow of Athenian life. Their trade and their finance; where they got their corn and how they raised their taxes—the place rings with it. Their customs are around us: we walk amid their usages, and we breathe an air charged with the public sentiment of the time. And when we listen to Raleigh, as, in Winchester Castle, from eight in the morning till eleven at night, he confronts his accusers and baffles the vulgar violence of Coke, our mind's image of this "courtier, soldier, scholar, all in one," is no longer the reflection of a reflection—the faint or faulty projection upon our apprehension of another man's notion, but the direct impression printed upon the tables of our brain by the very presence and bearing of the man himself.

In this manner, by bringing our minds into close and actual contact with the authentic monuments and genuine fragments of the days that are gone, we shall (if I may venture, without irreverence, to appropriate the prophet's imagery) reanimate and re-people that valley of dry-bones which we call history. Under the re-creating force of thought, there will be a shaking, and the bones will come together, bone to his bone; and the breath will come from the four winds, and breathe upon them, and they will live.

Well, then, if this is the fruit of applying our mind in the direction I have indicated, what shall we say of it? I think we may say that it is a very pleasant fruit. I, for my part, enjoy the flavour of it. I enjoy it; and there is no reason why I should not. Rather there is every reason why I should, for it is a very wholesome fruit. The mind grows and increases in strength, stature, and suppleness, by feeding upon it. And this growth and development, in faculty and capacity, is no inconsiderable result. It is, of itself, the worthy and sufficient end and justification of intellectual effort. But it is not the only result. To train ourselves, as we direct our thoughts back upon the past, not idly to gaze upon " authorized romance," impalpable abstractions, barren generalities, truisms that never kindle into truths, and facts that have neither voice nor utterance; but in such manner "to hold the mirror " up to nature as to shew virtue her own feature, scorn her " own image, and the very age and body of the time his form " and pressure," is to learn to look through the "dry light" in which the secrets of truth are visible—to discern the " veiled " hand that guides the world," and to recognize the laws that regulate the progress of mankind. And when we have attained to that, history will be to us something better than an old almanac.

PAPER VII.—ENGINEERING AND ENGINEERS.

BY LT.-COL. B. H. MARTINDALE, C.B., *Deputy-Controller, Associate Institution Civil Engineers, and Member Institution Mechanical Engineers.*

(Read before the Society April 12th, 1871.)

"ENGINEERING is the art of directing the great sources of power in nature, for the use and convenience of man." So said Thomas Telford, the eminent Civil Engineer, just 51 years ago, when, as first President of the Institution of Civil Engineers, he delivered his inaugural address. So, with even greater justice and honest exultation, may the Engineer of the present day exclaim, looking back at the mighty strides which science has made in the last half-century, and on the amazing results which surround us.

So numerous, so vast are those results, that we are fairly staggered with the magnitude of the subject as we begin to recall them. They meet us at every turn of daily life, and fill us with ever-fresh surprise at the powers which the Divine Creator has hid in nature, and at the ability with which He has endowed man to develop those powers.

In peace and in war, in our quiet homes and in the rushing travel of the day, on land and at sea, we meet the Engineer, and enjoy daily a thousand advantages and comforts from his skill and labor. The lighthouse which welcomes us as we approach the land; the breakwater which secures the anchorage; the quays and wharves at which the ship, itself of iron curiously wrought together, unloads; the engines within it, so mighty as to be capable of urging the mass, weighing thousands of tons, against the storm and over the ocean to the appointed post, and yet so delicately made that a bearing scarcely heats, and that the touch of a finger can govern the whole; the motive-power of water so combined with heat as to create steam—a power so terrific, that uncontrolled it can shatter into fragments the vast fabric which it is made to move, and yet so exquisitely controlled as in its use to prevent the very evils that would neutralize its power, and, as in the locomotive, to fan the flame that, fanned, creates fresh steam; the railroad, which, diminishing distance in proportion as time is saved, bears along that ever-increasing freight, and those ever-increasing myriads which no other known means of communication could have borne, carries the weary man of business and the toil-stained mechanic daily from the smoky stifling town to the clear invigorating country, or the eager traveller from the ship to his expectant home, to which his approach has already, swiftly as by lightning, been made known by the "winged word" which electricity speeds over the earth and under the sea,—one and all of these reflect the Engineer; while that home itself, lighted with gas, supplied with water, and warmed, ventilated, and drained, presents ever-present proofs of what we owe to science, and speaks of labor and discoveries not less real, if less striking, than the steamer, the railroad, and the telegraph, and certainly not contributing less to our daily comfort and increasing health and power of life.

Or if we turn to war: those fortresses which enable the defenders of a country to resist the attack of a superior force; those torpedoes and submarine mines which defend its shores and rivers; those huge guns, 35 tons in weight, carrying a missile of 700 lbs. in weight a distance of six English miles; the improved missiles themselves; those great plates of iron so craftily bolted together as almost to defy even such missiles; those cunning and yet simple rifles, breech-loading, deadly at 1000 yards in skilful hands; those adaptations of light, of signals, and of electricity, for instant communication to troops scattered over long distances; those most ingenious means of ascertaining the velocity with which the projectile leaves the gun from which it is fired, and of ascertaining the disruptive force of the powder when fired upon the gun itself; those carriages in which the very recoil of the gun is made of use to cover the gun out of sight of an enemy,—these and many other such-like things, among which may be mentioned the balloon, pressed into the service, present to us the Civil, the Mechanical, and the Military Engineer, combining with the Artilleryman in labors honorable to themselves and useful in the highest degree to their country.

Or, returning to the wants of peace: in the canals and locks which evade the rushing rapids, and turn the flank even of Niagara; in the improvement generally of internal navigation; in the drainage of low lands; in the construction and maintenance of embankments to resist the encroachments of the sea; in the formation of roads, carried with gentle gradients over the scientifically-sought lowest summits; in the erection of bridges over wide and rapid rivers—as, for example, the world-famed Victoria Bridge at Montreal; in the infinitely varied machinery, which appears almost endowed with life and reason, so wonderfully does it perform the ponderous as well as the delicate tasks entrusted to it in the factory, in the mill, in the arsenal, in water, and on land,—we recognize, once again, the skill and toil of the Mechanical and Civil Engineer.

Among the labors of the Engineer, none, perhaps, possess more interest to this country, and especially at the present time, than those connected with

CANALS.

It appears not improbable that the earliest canals were constructed in Egypt, and had for their object the better irrigation of the Delta of the Nile. Herodotus, whose narratives, however, must generally be taken "*cum grano*," speaks of the formation of a lake called Mœris, 450 miles in circumference, which was completed about 1385 years B. C. This was connected with the Nile by three canals, and its objects were to prevent the Nile continually overflowing the country, and to maintain a supply of water for irrigation.

Many canals are said to have been subsequently formed in Egypt by Sesostris; and about 610 years B. C., Necos is said to have commenced a canal to unite the Mediterranean and Red seas. This was continued by several monarchs, but apparently never completed, and was finally abandoned, until the Caliph Omar, about the year A. D. 644, or some 1254 years after its commencement, re-opened it, and cut another canal, which was used for upwards of 120 years, until the commerce of Alexandria was destroyed.

In Greece, many attempts to cut a canal across the Isthmus of Corinth, a distance of about five miles, failed. The traffic, and even the smaller craft, were, therefore, carried across it—somewhat as our passengers and goods are conveyed overland between Carillon and Grenville, *en route* to Ottawa.

Spain is indebted to the Moors for her canals, and for her system of irrigation generally. In China, the canals were said to have been of great antiquity; but they are probably not older than 900 years ago, a hundred years later than the first irrigation of Valentia.

In Italy, canals were of very early date. That through the Pontine marshes was cut about 162 years B. C.; and the Etruscans had made many before this, in connection with the river Po. The Romans attached very considerable importance to such works, and, both at home and abroad, frequently executed extensive works to improve the inland water-communication. But these works fell into decay with the decline of the Empire, and it was not until the 12th century that the construction of canals recommenced in Italy and Holland.

Between the 12th and 15th centuries many improvements in connection with canals were made in the navigation of the rivers Brenta, Mincio, Arno, Reno, Ticino, and Adda. But it was not until the year 1481 that two brothers, said to have been Dionisio and Pietro Domenico, of Viterbo, introduced, in a canal running from Padua to Stra, the lock-chamber enclosed by a double pair of gates, instead of the arrangement called the "conch," which had been in use in Italy since the 12th century. The fame of the invention of the lock spread throughout Europe, and the whole system of inland navigation benefitted by it.

Among the first navigable canals commenced in France, after the Roman era, was that from the Saone to the Loire. This was begun about the middle of the 16th century; but progress was suspended from time to time, and it was not finally completed till about the close of the 18th century. The canal is about 71 English miles long; the length of each lock is 100 feet, and breadth 16 feet; breadth of the canal at the top, 48 feet; at bottom, 30 feet; with an average depth of 5 feet 3 inches. There are 30 locks from Dijon to the summit-level, giving a rise of about 240 feet; from whence to the Saone there is a descent of 400 feet, accomplished by fifty locks.

The canal of Languedoc connects the Garonne, below Toulouse, with the Mediterranean, at Cette. It was commenced about the year 1666, and completed in 15 years. It is 64 feet broad at top, 34 feet at bottom, and 6 feet 4 inches deep. The vessels which navigate it carry about one hundred tons.

Another remarkable canal is that connecting the Somme with the Scheldt, which was commenced in 1766 and completed in 1810. Its length is 32½ miles, including two tunnels—one of 1200 yards, and the other of 3¼ miles long. It rises in its course 33½ feet, and falls 124 feet.

There are now in France nearly 3,200 miles of canals, a vast extent, especially when we consider that such works were commenced in that country nearly 400 years after they revived in Italy, and when we reflect upon the interruptions to which they were subjected during all their earlier history.

Before quitting the subject of canals, in connection with French engineering, we must for one moment refer to the Suez canal. This canal, nearly 100 English miles in length, runs from Port Said to Suez. The mean level of the Red sea is only 6 inches higher than that of the Mediterranean, and the tides in both seas are feeble; consequently, there are no locks. It is intended to attain a depth of 26 feet of water throughout. Its cost will probably be £20,000,000 sterling. Its execution is mainly due to the rare courage and perseverance of Mr. Ferdinand de Lesseps, who, by cutting across the sand uniting Asia and Africa, has opened a water-communication which may revolutionize the mode of conducting the traffic between the east and west, and which may never be closed while civilization exists.

Late as France was in the field, England was even later; for the first canal of any importance in England was that from Worsley to Manchester, constructed by James Brindley for the Duke of Bridgewater, who, in 1758 only, got an Act of Parliament for it in order to open out his coal-fields in South Lancashire. The construction of canals then became the rage, and prevailed during 40 years, and less ardently for nearly 30 years longer. As a result, there are about 120 canals in the United Kingdom, having an aggregate length of 3,000 miles. And as the superficial area of France to the United Kingdom is as 12 to 7, the latter possesses, in proportion to the size of her territory, very much more canal-accommodation than France.

Among the canals in Britain, the Bridgewater canal, already referred to, is justly celebrated for the excellence of its works, constructed, as they were, in the infant days of canal-making, by which, except for a distance of 600 yards, at Runcorn, where the Mersey is entered by 10 locks, which are together 82 feet 6 inches, the navigation for 73 miles is on one level.

The Caledonian canal, connecting the Scotch lochs, and affording, with 21 miles of canal, a navigable line upwards of 100 miles in length, between the seas on the eastern and western coast, will never be forgotten by any who have had the happiness of beholding the surpassing beauty of the surrounding scenery.

The depth of water in the canal is 20 feet. The canal is 122 feet broad at top, and 50 feet broad at bottom ; and there are 23 locks, 40 feet wide each, and 172 feet long. The work occupied from the year 1803 to 1829, and the total cost was nearly £1,000,000 sterling.

On the Ellesmere and Chester canal is a celebrated aqueduct, by which the canal is carried at a level of 127 feet over the river Dee. The bottom and sides of the canal are here made of cast-iron plates, within which the water flows. The water-way is 11.10, of which the towing-path covers 4.8. The total cost of the aqueduct was about £47,000, sterling.

The Grand Junction canal, which connects the iron and coal fields of the Midland Counties with London, falling into the Thames at Brentford, is 90 miles long, 42 feet wide at the water-surface, 28 at bottom, and 4 feet 6 inches deep ; lock-chambers, 80 feet long; breadth, 14 feet 6 inches. Steam-power is required to raise the water for the supply of the canal from one reservoir to another. The canal, in its course, first rises 37 feet, then falls 60, and then 112 feet ; rises again 192 feet, and falls again, first 127, and then 268 feet. Its total cost was about £2,000,000 sterling.

In the Huddersfield canal, there is a rise of no less than 436 feet, made by 42 locks, and a subsequent descent of 334 feet, divided by 33 locks. The Leeds and Liverpool canal is 127 miles long, with a rise to summit-level of 411 feet, and a fall of 433 feet. The locks will receive boats 70 feet long and 14 feet beam, and the least depth of water is 4 feet 6 inches.

The Shropshire canal presented a very curious feature in its inclined planes. It passed through a rugged country with a great scarcity of water. On the banks of the Severn on an inclined plane 1050 feet long, with 207 feet of perpendicular height, was a strong double railway, up which the boats, with their loads of five tons each, were drawn. They then passed along a level canal, descended by another inclined plane, and so on. These works were completed in 1792.

The canal tunnelled through the chalk between the Thames and Medway is in all 7 miles long, of which 2½ miles form the tunnel. It occasioned considerable anxiety and inconvenience by affecting the wells in the neighbourhood; but it saves the passage round the Nore and up the Medway, and nearly fifty miles in navigation.

A curious tunnel was one constructed by Brindley, only 9 feet wide and 12 feet high. It was nearly 3000 yards long, and boats could only be propelled through it by men called "leggers," who, lying on their backs, pushed against the sides and top of the roof with their feet. A boat occupied two hours in passing through. It has been replaced by more convenient works.

On the Great-Western canal were made lifts 46 feet high, up and down which boats weighing about eight tons ascended and descended in cradles, in about three minutes, with an expenditure of about two tons of water only.

Holland.

Holland, the level of a great portion of which is beneath the sea, is a country covered with embankments and canals. The very rivers are maintained within their course by artificial banks. Where the canals do not unite, vessels are transported from one to the other by mechanical contrivances. As a modern work may be mentioned a new ship-canal, to be finished in five or six years, now in course of construction, to connect Amsterdam with the ocean. The distance by the present canal is fifty-two miles; that by the new canal will be 15½ miles only, navigable for larger vessels than can now come up. This canal will be 197 feet wide at top, and 88 feet at bottom; minimum depth, 23 feet; locks, 59 feet wide. It will connect with a magnificent new harbour, which is being formed on the coast, by three locks or entrances. At the other extremity, below the city and wharves of Amsterdam, will be a vast dyke to shut out the Zuyder Zee, with three locks and sluices. The surface-water of this canal has to be kept twenty inches under low-water-mark; and the locks at each end are required for locking down. Besides the locks and sluices, three centrifugal pumps have been provided, which, together, will lift 440,000 gallons of water per minute. The shallow lakes through which the canal runs have to be re-drained to admit of this.

The United States.

It would be useless for me to enter here into any description of the canals existing in the United States. They are probably better known to most present, practically, than they are by me, even theoretically. It may be sufficient to say that in this, as in other Engineering works, the people of the United States have shewn themselves worthy descendants of the mother-country. No labor has been spared to render inland-water-communication complete. One of the peculiar features has been the admirable use made of timber in the construction of viaducts. Another is the vast length of the conjoined canal and river lines. Thus, the Ohio canal, between Portsmouth and Cleveland, is 307 miles in lentgh; the canal between Albany and Buffalo, on Lake Erie, with its numerous branches, and that between Albany and Oswego, on Lake Ontario, are respectively 363 miles and 209 miles in length; and the canal from the Hudson river into Lake Champlain is sixty-five miles in length. In the Morris canal, the rise and fall of 1674 feet in about 102 miles was mainly overcome by inclined planes, with a lock at each end and at the top of each plane, the boats being drawn up and lowered down the planes by machinery. The length of the canals in the United States much exceeds that in Britain; and there can be no doubt, from the energy and vitality which its people display, that wherever a canal is required in the States, there it will be made.

Canada.

In Canada itself, the Welland canal, 28 miles in length, connects Lakes Erie and Ontario. It has a fall of 260 feet, and can pass through vessels of 400 tons. From Lake Ontario to Lake St. Louis, seven short canals of the total length of 47 miles, overcome the fall of 220 feet in the river St. Lawrence. Through these, vessels of 650 tons can pass. The United States canal, of about one mile in length, at the Sault St. Marie, connects Lakes Huron, Superior, and Michigan. Vessels of 2000 tons can pass through this canal.

By these canals, and those already referred to as connecting Lake Erie and Lake Ontario with Albany, navigation exists between the tidewaters of the Hudson, the Upper Lakes, and the St. Lawrence sea-navigation.

The further improvement of canal-communication would appear to be of the highest importance to the development of Canada; and it is satisfactory to know that the subject is attracting more and more attention.

The Canal Commissioners, in their recent report, dated 24th February, 1871, recommend the construction of a new canal in Canadian territory at the Sault St. Marie; the enlargement of the Welland canal and of the St. Lawrence canals; the construction of a second set of locks at the lower entrance of the Lachine canal, with 17 feet of water on the sills; and the improvement of the channels of the St. Lawrence, so as to give 14 feet of water throughout above Montreal, and 22 feet draught, at low water, between Montreal and Quebec: the canals to have an uniform width of 100 feet, with locks having 270 feet of chamber between the gates, 45 feet in width, and 12 feet of clear draught on the sills; the bottom of the canal to be at least one foot below the sills of the locks. By these means, it is considered that vessels ranging between 1000 and 1500 tons could trade between Chicago and Montreal, a distance of 1261 miles.

In addition to the above, the Commissioners recommend, as works of first-class importance, the improvement of the existing line from Allanburgh to Port Dalhousie; the Ottawa canal improvements, from Ottawa city to Lachine; the enlargement of the Chambly canal, and the construction of the Bay-Verte canal.

The locks for the Ottawa and Chambly canals are recommended to be 200 feet by 45 feet, with 9 feet draught over the sills; the locks for the Bay-Verte canal, 270 feet in length of chamber, 40 feet in width between the gates, and 15 feet draught of water on the sills.

The Commissioners further recommend, as works of the second-class, but prospectively of the utmost importance, the construction of the Upper-Ottawa canal, and the deepening of the rapids of the St. Lawrence to a minimum depth of eight feet at the lowest water.

The Rideau Canal should be maintained as one of the public works of Canada; but the construction of the Caughnawaga canal, and of the Erie and Ontario ship-canal, the Commissioners consider should be left entirely to private enterprise. The projected Georgian Bay canal, which is equal in length to that of the Suez canal, and is encompassed with natural obstacles infinitely greater, is regarded as commercially worthless, if not as physically impossible.

The cost of the improvements recommended is estimated at $19,170,000. But this expenditure is considered as insignificant when compared with the immense benefits that would arise from the carrying-trade of the great West passing through Montreal and Quebec. The Government, as I gather from the columns of the daily press, have decided to proceed with a portion of the improvements recommended for the Welland canal, for the Ottawa canal at Grenville, and for the St. Lawrence; but have deferred action regarding the remaining recommendations, on various grounds. Cordially must we all unite in hoping that in these most important works, Engineering and Engineers may assist its people to the utmost possible extent in developing the resources of this noble country, before which such prospects of a great, useful, and happy future are being so continuously unfolded.

RAILROADS.

The question of *railroads* is not of less importance to the Dominion of Canada than that of canals.

Prior to the 17th century, wooden railroads were in use at the Newcastle coal-fields. Originally, the waggons worked along single lines of longitudinal timbers; but as the frequent repair interfered with the traffic, an upper rail of wood was pegged to the timbers, and renewed as it wore away.

The first iron rails were probably those of cast-iron used at the Norfolk colliery, near Sheffield, about 1776; but cast-iron wheels had been introduced about ten years before at the Colebrooke-Dale iron works. At this time the flange was on the rail, instead of on the wheel, as at present.

Various improvements succeeded; and in 1820 a patent was obtained, embodying the principles upon which rails are now made for railroads, viz., by passing them, when red-hot, through rollers grooved in the required form.

In 1802, the first patent was taken out by Richard Trevithick for a locomotive-carriage, on the high-pressure principle, to work on a road or railroad. In 1811, Mr. Blenkinsop took out a patent for the first double-cylindered engine. This weighed five tons, and drew 94 tons on a level, at 3½ miles an hour; one wheel being toothed, and working in a rack on the side of the railway. Various improvements followed; and in October, 1829, took place the famous trial in which Mr. Stephenson's and Mr. Booth's locomotive, the *Rocket*, won the prize.

The *Rocket* and tender weighed only 7½ tons, and drew 44 tons, gross, at the rate of 14 miles per hour. From this may be said to date the present locomotives.

Between 1811 and 1822, increasing attention had been drawn to the subject of railroads. In that year the Stockton and Darlington Railway was proposed; but, from the opposition met with, the act was not obtained until the following year. This was the first railway opened in England. In 1824, the bill for the railway between Liverpool and Manchester was lost, in committee, from a similar cause, and withdrawn. It was not again introduced until 1826, when it triumphed over all opposition, and the line was at once proceeded with. From that time the construction of railways proceeded with increasing rapidity in England, until it became almost a mania, which reached its climax about 1845, and vast fortunes were made and lost in railway speculations. Since that time, however, many lines have been made, but with more consideration as to their necessity and probable commercial results.

From England the construction of railways spread over Europe, and extended to the United States. But it is a fact, and remarkable as shewing how slow the very ablest men sometimes may be in grasping the value of the results of science, that, soon after Louis Philippe came to the throne of France, Monsieur Thiers, now President of the present government in France, was sent to England to examine into the advantages of the railway system, and reported against its adoption in France; and that thus the introduction of railways in France was postponed for eight or ten years. Such an error of judgment may, however, be the more readily excused when it is remembered that so late as the year 1835, Dr. Lardner, a man unquestionably of the highest ability, declared that it was a mechanical impossibility for steamers successfully to cross the Atlantic.

As a sort of contrast, and as among the most interesting works of the period, we may turn to those known as the Mont Cenis Tunnel and the Mont Cenis Railway. The estimated length of the tunnel, which does *not* pass under Mont Cenis, is 7⅗ miles (English), and the cost not less than £4,000,000. It is intended to connect the railways of France and Italy. The rails of the Mont Cenis railway, which is altogether independent of the tunnel, follow the surface of the road over Mont Cenis. The necessary adhesion is obtained, and also perfect safety to the train, by the pressure of horizontal wheels on a central rail. The new engines will take up loads of 50 tons. Between St. Michel and Susa, the line is 50 miles in length. It cost, with engines and rolling-stock, about £8,000 a mile, and affords an admirable solution of the difficulty of surmounting mountain ranges at a moderate cost. The working expenses are, however, heavy.

There are now in England between 14,000 and 15,000 miles of railway; in France, between 10,000 and 11,000 miles; and in the United States, upwards of 43,000 miles. The latter lines, however, though made to carry the traffic which passes over them, cannot compare for finish with the lines at home.

Railroads in Canada.

In the Dominion of Canada there are already upwards of 3,000 miles of railway; and the new lines in process of construction, including the Intercolonial line, will increase this length by nearly one-half. The means by which the Canadian Pacific Railway, spanning the continent and connecting the two great oceans, is to be accomplished, are now under the consideration of the Dominion Parliament. Before this can be completed, many other lines will, no doubt, have also been made. We may hope that there may never be found wanting, to the Dominion, statesmen to advocate and carry out such railways as may be of vital aid in its development, nor Engineering and Engineers to execute, at the least expense, and with the best work, the railways which the State or private enterprise may undertake.

Before quitting this subject, may I be allowed to express my dissent from the extreme strictures which I have heard passed upon the manner in which the railways in Canada are managed. I am not saying that some improvements in details might not be effected. But I do say (and I have some right to give an opinion on such matters, having had charge of the construction and working of railways in New South Wales, in addition to that of the telegraph, roads, and other public works of that colony,)—I do say, that when the extreme difficulties arising from the climate are considered, and the inconveniences unavoidable with long single lines of railway, the working of the lines, the comparative rarity of accidents, and the almost entire absence of loss of life, merit approbation, rather than such censure. I say, further, that in a comparatively new and sparsely settled country, twenty miles an hour, actual distance made, is a sufficient rate for practical purposes. Still, there are improvements which might easily, I should conceive, be made. For instance, the *unnecessary* delays between Montreal and Quebec might cease; and I was glad to see that the Board of Trade* of Quebec had been urging on the Managing-Director of the Grand Trunk Railway the necessity of better arrangements in connection with Quebec. There can surely be no real difficulty in arranging that we may take our tickets and check our baggage on this side of the St. Lawrence, instead of on the other; and we may even hope that in time we may be ferried over so as to catch the train, and not some hours before it starts. Indeed, so evident does it appear that much of this could with ease be done, that I am disposed to think that the fault rests more with ourselves for letting such matters sleep, than with those whom in all my relations with them I have invariably found so courteous and willing to attend to any suggestions for the public convenience, as the officials of the Grand Trunk Railway.

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* NOTE.—The establishment of the Dominion Board of Trade must be considered as a measure calculated in the highest degree to benefit the Dominion of Canada.

ELECTRIC TELEGRAPH.

I must absolutely refuse to be seduced into saying anything whatever about the Electric Telegraph, a subject which so naturally recurs to the mind in connection with improved communications. It affords, in itself, matter more than sufficient for one evening. I will only say that we appear to be still in the infancy of our knowledge of electricity, and that we may anticipate, from the development of its powers, perhaps even greater wonders than the amazing and invaluable results already obtained.

ROADS.

The wonderful inland water navigation of Canada, and the early introduction of railways, render *Roads* a subject of less importance than in other countries. Still they must have a large influence on the future of Canada.

As an instance of their value, it may be remembered that the Highlands continued in a state of semi-barbarism until the construction throughout their length and breadth, by the government, of roads; and the law still holds good that there is no surer means of increasing the prosperity of a country than by improving its means of communication.

I shall not occupy your time with any description of those superb roads constructed by the Romans, not only in Italy, but wherever their conquests extended, and which have won the admiration of all succeeding ages. Of these, the great roads alone extended over 53,000 Roman miles. They were constructed with vast labour and expense, and maintained with the utmost care. But with the decline of the Empire, they fell into decay, and the succeeding period of barbarism was as fatal to the *preservation even* of internal communications, as it was to science and art generally.

Some efforts towards improvement were, indeed, made in the seventh century, under King Dagobert, and these probably involved the partial restoration of some of the Roman roads.

In the same era we find existing the abominable system of "*corvée*" or forced labor on the roads, which cropped up from time to time, until it finally disappeared in the revolution of 1790.

Charlemagne, towards the close of the 8th century, revived "the ancient laws and customs" under which each district was bound to construct bridges and roads; and this was more or less enforced to the middle of the 9th century. But the bridges were mere causeways or approaches to ferries over rivers, and the roads for the next three centuries were little better than winding horse-paths. But the crowds of pilgrims flocking yearly to the shrines of favorite saints, and the crusades imparting new activity to travel, and slowly-growing civilization, forced, in the twelfth century, attention to the state of the roads. Then, to build a bridge was a work of charity, and large properties were dedicated for ever for their construction and maintenance. And about this date arose the celebrated monastic order of Bridge-builders, known by the name of "Brothers of the Bridge," or Pontifex (Bridge-builder). Their reputed founder was the whilom shepherd, St. Benezet, who built the bridge of Avignon over the Rhine, between 1177 and 1187, A.D. They were a mendicant order, solely however to raise funds for bridges, and continued for several hundred years, and constructed bridges in most parts of Europe. The last of them was the Monk Romain, who was also probably the first of the engineers in the far-famed *Corps des Ponts et Chaussées* of France, when instituted in the early part of the last century.

Efforts were made in France in the reign of Louis XI. and subsequently, by the establishment of post-horses and relays of horses, and by the appointment of the Treasurers of France, afterwards known as the Receivers-General, to improve the great highways; but even these were never suited for rapid travelling, except by horsemen, and they had fallen into a miserable condition at the death of Louis XIV. But under the celebrated *Corps des Ponts et Chaussées*, improvements on systematic and scientific principles were commenced and continued, and admirable roads by degrees provided. These under Napoleon the First were divided into three classes—the royal, the departmental, and the rural roads—the 1st kept in repair by the State, and the 2nd and the 3rd by the provinces and by the districts through which they passed. France has, or at any rate had until now, about 100,000 miles of good carriageable roads.

The best roads in Great Britain, for centuries, were the remains of those left by the Romans. In the 13th and 14th centuries we find efforts made to improve the communications by the removal of trees on either side, and by the levying of tolls to repair roads reported impassable. Turnpike roads were established and acts were passed for repairing and widening some of the public roads on the return of Charles II.; and between the years 1700 and 1770, no less than 530 acts of Parliament relating to turnpike roads were passed. For all this, however, a century ago the roads of Great Britain were in a sufficiently miserable condition. But between this period and the present, there have been constructed or improved

160,000 miles of good carriageable roads in the United Kingdom, of which many are probably as perfect specimens of road-making as can exist,—affording daily proofs, to the thousands who traverse them, of the practical value of Engineering and Engineers.

LIGHTHOUSES, BREAKWATERS, HARBOURS, DOCKS, QUAYS, WHARVES, AND RIVERS.

To a great maritime power like the Dominion of Canada, fourth, if not indeed since the misfortunes of France third among the maritime powers of the world, lighthouses, breakwaters, harbours, docks, quays, and wharves, and the improvement of rivers by embankments, cuts, or dredging, must ever be subjects of primary interest. It is obvious, however, that we can to-night take but the merest glance at them.

One of the most celebrated ancient lighthouses on record was that built on the Isle of Pharos by Sostratus, of Cnidos, to render the harbour of Alexandria approachable at all times. This Pharos was built of stone, and was 450 feet high; and, it is said, could be seen at a distance of 100 miles. The light consisted of fires lighted in a species of lantern at the top.

The Romans constructed pharos or lighthouses, as at Ostia, Terracina, Puteoli, Antium, &c., the lighting of which was also managed by fires at the top. Some of these were superbly built of stone, and contained accommodation for those entrusted with the care of the ports. A specimen of the Roman Pharos, but of a ruder description, may be seen in England, in Dover Castle.

A very remarkable lighthouse in France was constructed at Cordouan, two leagues from Bordeaux, between 1584 and 1610, by Louis de Foix, on an island, dry at low water, but completely covered at high water. The height of the building from the rock was 162 feet. Reflected light was used in this tower for the first time about the year 1780.

The shores of the narrow seas which surround Great Britain abound in lighthouses: among the most famous are the Eddystone and the Bell.

The first Eddystone lighthouse near Plymouth, was built between 1696 and 1699, and was destroyed in 1703 by a violent storm, in which the engineer and workmen employed in its maintenance, as well as the keeper, perished. It was rebuilt between 1706 and 1709, but destroyed by fire in 1755. It was recommenced under the celebrated Smeaton, in 1756, and again completed in a little more than three years, and, happily, remains now as perfect as when built.

The Bell-rock lighthouse, which protects the trade of the friths of Forth and Tay, and of the North sea and German ocean in the vicinity of the Bell-rock, was commenced under the equally celebrated Robert Stephenson, in 1807. Its principle is the same as that of the Eddystone lighthouse.

At Lowestoft is a lighthouse nearly 200 years old, situated on the cliff overlooking the German ocean. In this the light was formerly given by a coal-fire within a glazed chamber, and was said to be visible for a great distance at sea.

About twelve or thirteen years ago, a lighthouse was constructed on Roman Rock, at Simon's Bay, Cape of Good Hope. The structure was a circular tower, 15 feet diameter, 48 feet high, of cast-iron plates, with a central shaft 16 feet diameter for the revolving machinery. Great difficulties existed, as only once in three years was it so calm that no sea broke over the rocks at *low* water. From various reasons, the iron plates failed; and it was found necessary to surround the first 24 feet in height of the tower with granite, backed with concrete. This was completed by the end of 1866, and the tower now serves to warn the mariner against the "Cape of storms."

Moles and Breakwaters.

The use of moles and breakwaters to break the force of the waves and afford additional security to anchorage, dates from the earliest ages, and has been continued by every seafaring nation. It is impossible to do more here than just to refer to them. Among the most celebrated at home, and worthy of special mention for the lesson which it teaches of the value of consulting nature in such works, is the *Plymouth Breakwater.*

This work is 5100 feet long at the top, and 5310 long at low-water-line. The depth of water in which it is situated varies from 36 to 60 feet at low-water spring-tides. The tides rise from 12 to 18 feet. The lighthouse is on the west end. The work was commenced in 1812, and is mainly composed of vast masses of lime-stone thrown into the sea, *which has been allowed to form the outer slope.* In 1841, when the work was considered as completed, nearly 3,400,000 tons of stone had been used in it, and the cost had amounted to nearly 1½ millions sterling. A fort has recently been constructed in rear of the centre of the breakwater, which, with the works on either shore, defend the entrance into Plymouth.

Harbours, Docks, Quays, and Wharves.

My space absolutely forbids that I should enter into any detail regarding harbours, docks, quays, and wharves. They have necessarily occupied the attention of maritime nations in every era; and now, not only the ever-growing traffic of the world, but also the vastly-increased tonnage of the ships that bear that traffic call for fresh efforts. Nothing in engineering involves heavier expense or requires more sound judgment and sterling ability than works of this nature; and the manner in which the wants of the age are met reflects the highest credit upon Engineering and Engineers.

Bermuda Dock.

As an interesting and novel effort in providing a dock, may be mentioned the building, and transport across the ocean, of the Bermuda dock. A dock capable of receiving large vessels of war had long been an absolute necessity at Bermuda. It was found impracticable to construct it of stone. A hulk was, therefore, constructed at home, with hollow sides and bottom, each fully 20 feet wide. The interior of the hulk is shaped to the form of a large vessel, and gives a dock 330 feet long, 84 feet wide, and 53 feet deep. The hulk is of wrought-iron, about half an inch thick, and weighs about 8,200 tons, besides 400 tons in the caissons. It will take in any vessel now afloat, except the *Great Eastern*, which is too wide. Our largest ironclads, having a displacement of 10,200 tons, can be lifted by it so as to have their keel out of water. The dock, using her caissons, will lift and lay completely dry a vessel weighing 8,000 tons; and the dock, being in the form of a ship, can be heeled over so as to be thoroughly cleaned from fouling. The dock occupied two years and nine months in building, and was thirty-six days in being towed to Bermuda. Her draught of water, light, is 11 feet 2 inches, and 50 feet when submerged for docking a large ironclad. We are indebted to Lt.-Colonel Clarke, of the Royal Engineers, C. B., Director of Works to the Admiralty, for this dock.

Harbours and Docks in Germany and Malta.

In northern Germany, great attention has been, and is still, being paid to the construction and improvement of dock-harbours and dock-yards, both for naval and commercial purposes. Among these may be mentioned the Royal dock-yards at Wilhelmshaven on the Jade, and at Kiel. But the widest and deepest dock in the world is the new Royal naval dock at Malta, which was opened on the 16th of February last, and named the "Somerset Dock." It is 34 feet deep, 80 feet wide at entrance, 104 feet wide between the copings, and 430 feet long. It cost, including the heavy works necessary in making an entrance to it, about £150,000 sterling.

Improvement of Rivers.

The improvement of rivers by embankments, cuttings, dredging, &c., requires the nicest judgment in the Engineer. The force of an apparently trivial flow of water is so irresistible when that flow is stopped, and the action of water on a large scale so often varies from the expectations entertained, that the best Engineering is required to deal with such forces.

Holland.

Holland is pre-eminently the land of embankments, not only as regards its rivers, but also the dykes raised to resist the encroachments of the sea. These are, in many places, 30 feet above the level of the ocean. And as an instance of how the simplest may often be found the most effective means, it may be mentioned that bundles of reeds twisted together, laid horizontally, and secured to the dykes, with piles driven in above the reeds, are found among the best methods of retaining the dykes towards the sea.

It has been by these means, and by drainage, that Holland, much of which is below the sea, now embraces some of the richest land in the world, and bears its testimony to the happy results of Engineering and Engineers.

Embankment of the Thames.

The embankments in England, along the river Thames, date back certainly from the period of the Romans. As a magnificent specimen of modern work may be mentioned the embankment from Westminster bridge towards London bridge, along the northern bank of the same river.

DRAINAGE OF LOW LANDS.

The drainage of low lands presents, not only on account of the rich soil which is usually thus acquired, but of the improved health gained for the entire vicinity, another field for Engineering and Engineers, the value of which will increasingly be felt in Canada.

WATER FOR IRRIGATION AND GENERAL USES.

In connection with drainage, our thoughts naturally turn to the supply of water for irrigation, and for the general uses of man. We trace the progress of this branch of Engineering in the simple contrivance of the pole and bucket, still to be seen in daily use in many parts of the world; in the adoption of the principle into most countries, and its extension by the use of animal power; in the land "watered by the foot;" in the narrow channels along which the fertilizing water was led as it is led to the present day; in those canals of which we have already spoken; in those vast reservoirs in India which count their embankments by thousands of miles, and their works of art by the hundred thousands; on which vast territories depend at times for their very existence, and which Australia, if she intends to grow in prosperity as she should do, must in some measure imitate. We have it in another form at Jerusalem, and find it's witness in the ruins lately explored there; in the ancient Alexandria; in those superb Roman aqueducts and other works, the very remains of which are magnificent; in such works as those which supply busy Glasgow, by gravitation, with the purest of water from the distant shores of lovely Loch Katrine, or as supply, on this continent, the young giant city Chicago; or—and we are glad to note the exception to the general gloom and decay which have settled on modern Spain—as evidenced in those works which have recently supplied Madrid with good water at a cost of upwards of 2¼ millions sterling. And we trace its more delicate touches in the artificial lakes and refreshing fountains which give fresh charms to our cities, parks, and gardens; and in that additional comfort in our homes, the value of which we, perhaps, only realize when extreme cold or other causes deprive us of it.

DRAINAGE AND SEWERAGE OF TOWNS.

The drainage and sewerage of towns present another field of Engineering, and one of daily-growing importance as population increases, and as the absolute necessity is seenof avoiding the pollution of streams and rivers. Certainly, there are at least many situations in which some "dry-earth" system must receive an amount of attention greater than has as yet been bestowed upon it. The cloacæ of Rome and the main sewerage of London may be mentioned as remarkable ancient and modern instances of this branch of Engineering.

MACHINERY.

We must pass by the entire branch, wonderful indeed as it is, of machinery; from the mighty marine engine; the locomotive, with its surprising strength and speed; the whole system of pumps and pumping engines; the hydraulic press; the ponderous Nasmyth hammer; the mighty planes for iron; the steam-rollers for road-making; the exquisite machines that supply more accurately and with infinitely greater rapidity than man, their maker, could do the most delicate articles for peace, and the finest portions of the stores required for war, in the production of which this continent has rivalled Europe. On one point only, and that because it is of practical and growing importance in every-day life, will I for a moment detain you. I refer to the necessity of the utmost care in the construction and maintenance of steam boilers, and of their periodical inspection.

A very interesting paper on this subject, by Mr. Martin, of Stourbridge, was read at the Nottingham meeting of the Institution of Mechanical Engineers, in 1870. During the four years from June, 1866, to June, 1870, there were no less than 565 explosions, or about five in every two days. Of these, 219 occurred in England and 346 abroad. By the 219 which occurred in England, 315 persons were killed and 450 persons injured. Out of these 219 explosions—

95 were due to faults of construction or repair ;
62 " " to faults to be detected only by periodical examination ;
54 " " to faults which should be prevented by careful attendants ; and
8 only to extraneous or uncertain causes.

Thus, with the exception of eight out of 219 cases, the causes of explosion would have been detected by periodical examination. It must be remembered also that all boilers, however good in original construction, are liable in course of time to get out of order and explode, and that this liability is vastly increased if the boilers are originally so constructed or set, as is still often the case, as to render examination next to impossible. Further, that even with boilers whose original construction promises safety, that safety is ensured so long only as everything is maintained in good condition ; and that an originally excellent boiler may be so weakened by repairs as to ensure explosion. This matter comes closely home to us all ; for, out of the above-named explosions, between six and seven per cent. occurred in domestic or heating-apparatus boilers, and several in the portable crane boilers so commonly used on wharves.

It may be well, further, to mention that—1st, boilers which bear the hydraulic test may still be dangerous ; 2nd the condition of a boiler can be satisfactorily ascertained *only* by periodical examinations; and 3rd, the cost of periodical examination is so little as to be far outweighed by the greater security obtained.

MILITARY ENGINEERING.

A very few remarks must be given to the large subject of Military Engineering. The improvements in arms has led to alterations in works of defence, the new system superseding those previously adopted, as completely as these set aside the works of previous ages. Among the objects now principally sought are so to trace the works as to prevent enfilade while securing a heavy fire on a besieger; the cover from hostile fire of such masonry as must of necessity be used; sufficient casemated protection; and the retention of good ditches and powerful flanks protecting the ditches to the latest possible period of a siege. In the arms themselves, we see the results of the earnest application of science to Military Engineering in the production of guns whose powers are marvellous, and of the breech-loading rifles, and ammunition, and mitrailleuse, of the day. Of the guns, the latest offspring is that named the "Woolwich Infant," 35 tons in weight, with a bore 11½ inches in diameter, and a projectile of 700 lbs. weight, capable of a charge of 160 lbs. of powder, and of a range of 6 miles. Ten similar "infants" have been ordered to be manufactured, that, with others, will probably be lodged, trained, and made of use as necessary, on board the large monitors now building, each vessel carrying four in two turrets. Of the rifles, the Henry-Martini, the last approved, is considered to surpass even that most beautiful weapon, the Snider-Enfield. The ponderous weight of the guns has, in turn, evolved the most ingenious mechanical appliances for working them and for supplying their ammunition. The excessive recoil produced by the heavy charges has been neutralized by similar means, and even taken advantage of by Captain Moncrieff, R.A., to lower the gun under cover. The enormous pressure on the guns, produced by the same heavy charges, has led to the invention of Captain Noble, R.A., for testing the pressure of the charge when fired upon every part of the gun, and to the substitution of gunpowder of greatly increased size and of slower combustion—the later arising, I am informed by one of my brother-officers in the Artillery here, mainly from increased compression. The importance of the slower combustion may be seen from the fact that projectiles fired with one description of powder may produce no more effect than those fired with another description of powder upon the object aimed at, while the disruptive effect of the powder upon the gun from which it is fired may be one-third greater; or, in other words, one powder can do an enemy no more harm than the other, while it will do its own gun one-third more harm. The tremendous effect of such missiles and powder upon works of defence has evolved a combination of iron-plates so ingeniously held together and so placed upon the works as to defy even that effect; while the power of vessels armed with such guns as the "Woolwich Infant," and themselves armour-plated, has led to fresh means of defence in torpedoes and submarine mines exploded by electricity. And it is a fact, full of significance, that Lord Napier of Magdala is an Engineer—Napier, who, in Abyssinia, shewed with what a lavish hand and with what effect England, idly called degenerate, can pour out her men and treasure when the lives and liberty of Englishmen are concerned; and that Moltke, the now world-famed strategist of Germany, is also an Engineer.

My time and I am sure your patience are exhausted; and yet, as you will have perceived, many subjects have been barely sketched, and very many have been altogether omitted. In considering those subjects which *have* been touched upon, I have very freely availed myself of the papers of the Institution of the Civil Engineers (including the charming address of Mr. Vignolles, its very able President in 1869-70); of the papers of the Institution of Mechanical Engineers; of Cresy's

Encyclopædia of Civil Engineering; of the Year-Book of Canada for 1870; and of the columns of the Daily Press. My thanks are also due to S. J. Dawson, Esq., C. E., of the Department of Public Works at Ottawa, for a number of reports and pamphlets on the public works of the Dominion of Canada.

Before I sit down, I would just bring under your attention the encouraging fact—encouraging especially to a young country before which such a vast future is unfolding itself as is the case with the Dominion of Canada,—the encouraging fact of the comparatively very recent period within which the most useful inventions of modern times have arisen, and of the speed with which these inventions have been improved upon. It is barely a century since the construction of canals and roads was commenced in earnest in Great Britain, or since the first little steamers appeared in France and Scotland; and it is much less than a century since the first efficient steamer was made. It is about three-quarters of a century only since Murdock first lighted his house and offices at Red Ruth in Cornwall with gas; it is 63 years only since a very *small* portion, and much later since any *large* portion, of London was lighted with gas. The birth of railways and of the electric telegraph is cöeval with that of those present here to-night of middle age. What, then, may our descendants not hope to see? And is it too much to say that in its progress towards prosperity, power, and increasing influence for good, the interests of this great Dominion of Canada are inseparable from those of Engineering and Engineers?

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APPENDIX.

REPORT OF THE COUNCIL

OF THE

LITERARY AND HISTORICAL SOCIETY OF QUEBEC,

FOR THE

YEAR ENDING 31st DECEMBER, 1870.

THE Council has the pleasing duty to report that the past year has been one of increased and uninterrupted prosperity. The Stated Meetings were made free to the public, and were well attended. The papers read were of both local and general interest, and five of them have been published in the "Transactions."

Many and valuable additions, both by purchase and donation, have been made to the Library and Museum, including about one hundred and fifty volumes of the serials, which have been bound, and are now in very general request. Though several invitations were given to members of the Society to enter in the "Recommendation Book" the titles of books suitable for the Library, very few availed themselves of the opportunity, and the Council had to depend on its own judgment, which they trust will be found to have been exercised to the advantage of the Society.

In consideration of the large increase in members, many of whom seem to have been mainly attracted by the convenience and comfort of the Library, the Council thought it expedient to place on the table, in addition to the valuable periodicals previously taken, the London, Parisian, and Canadian *Illustrated News*, and the London *Engineer*. While the Council have been disposed to go very far in this direction, they trust that it will never be forgotten that the chief objects of the Society, and that for which the Legislature votes its annual grant, is for making researches into the early history of Canada, and for "receiving, procuring, and publishing interesting documents and useful information in connection with the Natural, Civil, and Literary history of British North America."

The expenditure has been large, much larger than was at one time contemplated, as within the past few weeks it was found necessary to proceed with the erection of a large glass-case in the centre of the Museum, which, in the opinion of the Curator, was rendered necessary, in order to prevent the destruction of some of our most valuable specimens in Ornithology, which were exposed in the Museum, and also for the better exhibition and classification of others. This has been effected at a cost of about $150, and, with the sums previously paid for specimens, has caused an expenditure for the Museum more than its due annual proportion. The Treasurer, however, after making provision for the payment of every claim against the Society, is still able to shew a balance to credit of $479.72.

The Treasurer's Account shews the state of the account for the year:

Revenue..................................	$2,138 19
Expenditure..............................	1,473 40
Balance..........................	$664 79

The Balance is apportioned as follows:

Historical Document Fund..................	$130 42
Life Members' do.	54 65
General Fund..........................	479 72
	$664 79

During the past year, the number of members was 209, of whom 195 are entitled to full privileges, having paid all dues. After striking from the list the names of all members who had left the city, who had resigned, or ceased to be associates from other causes, there now remain in full membership 202 members.

It was the intention of the Council to have completed, before the close of the year, the printing of the Catalogue of the Library; but, though the manuscript, after considerable unavoidable delays, has been for some time in the hands of the printer, no progress has yet been made; but the printing will be proceeded with now, without further interruption.

The arrangement with Mr. Mathison, as the custodian of the Rooms, Assistant-Secretary, and sub-Librarian, continues to give every satisfaction; and the friendly and mutually advantageous position with Morrin College remains unimpaired.

WM. JAS. ANDERSON,
President.

PAPERS READ BEFORE THE SOCIETY.

1870.—January 5th—Rev. J. Douglas, President:—On the Physical Constitution of the Sun, and the Eclipse of August 7th, 1869.

" January 19th—Dr. Anderson, President:—On the Expatriation of the Acadians, or the Poetry and Prose of History.

" March 16th—Dr. Larue:—On the Gold, Copper, and Iron Deposits in the Province of Quebec.

" March 23rd—Dr. Douglas:—A Whaling Voyage to Spitzbergen, fifty years ago.

" March 30th—Bishop of Quebec:—On the Literature of Queen Anne's Reign.

" April 6th—Dr. Anderson, President:—On Murray's Despatch to Secretary Pitt on the Military Operations at Quebec, from the Capitulation by De Ramezay on the 18th September, 1759, to the raising of the Siege by De Levis on the 17th May, 1760.

" April 27th—Captain Ashe, Vice-President:—On the Eclipse Expedition of August, 1869.

REPORT OF THE CURATOR OF THE MUSEUM.

On taking charge, in January last, of the Natural History department of this Society, it became the pleasant duty of the undersigned to allude to several valuable contributions recently made to the Museum.

In reviewing the incidents of that year, it also became necessary to express regret at this Institution not having been in a position to take advantage of the very liberal offer made by a learned Professor of Natural History from Lyons, France, to exchange with us, for specimens of our *Fauna*, some three hundred species of European birds, natives of the Alps, Pyrenees, Jura, and sea-coast of France.

This gentleman had left in the possession of the undersigned these valuable specimens for purposes of exchange. The Laval University, the Normal School, and several owners of private collections, readily took advantage of this offer. It is, however, satisfactory to know that a great portion of these foreign birds now enrich the Museums in Canada.

Should ever a similar opportunity occur, the Society, by means of the duplicates of specimens in skins, which the undersigned has made it his business to procure, will be in a position to effect exchanges.

Amongst the benefactors of the Society conspicuously shines the name of a Quebecer, now promoted to an important position in England—John W. Bligh, Esq., M.D., C.M., M.R.C.S.E., &c., who forwarded to one of our oldest members, W. Marsden, Esq., M.A., M.D., one of our Vice-Presidents, several very handsome and rare birds from Australia and elsewhere. Thanks to him, students of Natural History can now find in our collection that famed wanderer of the Great Deep whose untimely end brought on the head of the "Ancient Mariner" such untold misfortunes. There stands before you, gentlemen, the Albatross, whose extent of wing sometimes measures as much as ten feet.

The want of suitable glass-cases, to exhibit our rapidly-increasing specimens, has been severely felt this summer : one or two large ones, which remained unprotected, have been eaten by moths and insects ; but before further damage was done, the undersigned, under the sanction of the Board, ordered the handsome, large centre-case which members now see in the Museum. This will afford what was indispensable—space to exhibit, classify, and preserve large birds, animals, and fishes. Though an expensive improvement, it was imperatively required; and no one, the undersigned believes, will be disposed to question its utility.

It is considered advisable to draw attention to the expediency of completing the collection of birds' eggs, which the Society began some years back.

Oology is a science which, though of comparatively recent birth, is rapidly increasing in favor, in America as well as in Europe. It has a very practical application as an auxiliary to classify birds, especially the birds of prey, whose real history is yet so imperfectly known. The variety of plumage in the hawk family, caused in a great measure by climate or age, has been a source of endless perplexity to naturalists. Oology, by the inspection of the size, form, markings and colour of the eggs of birds, has frequently afforded a clue to these mysterious changes in plumage, by fixing the species. Foremost amongst American oologists may be reckoned Dr. Thos. Brewer, of Boston, the publisher of a handsomely-illustrated volume on Oology. This science is also a favorite one in New York, Philadelphia, and Washington —every city, in fact, where large collections exist. A tabular classification of Canadian birds, with their Latin and English names, has also been procured by the undersigned, who looks forward to extensive additions to the Museum shortly. The study of Natural History, especially that department which treats of Ornithology, is particularly attractive and ennobling in its aim, making the mind familiar with some of the most lovely and loveable portions of the creation. Its pursuit, in bringing its votaries amidst the green fields, majestic woods, or boundless prairies of this continent, is healthy and manly. Nor can one find a higher or more eloquent tribute—paid by an able naturalist—to American birds, than the words of Alex. Wilson, who, though familiar in his youth with the birds of the old country, thus expatiates on those of America, the land of his adoption:—"The Ornithology of the United States exhibits a rich display of the most splendid colours, from the green, silky, gold-bespangled down of the minute humming-bird, scarce three inches in extent, to the black, coppery wings of the gloomy condor, of sixteen feet, who sometimes visits our northern regions,—a numerous and powerful band of songsters, that, for sweetness, variety, and melody, are surpassed by no country on earth,—an ever-changing scene of migration from torrid to temperate, and from northern to southern regions, in quest of suitable season, food, and climates, and such an amazing diversity in habit, economy, form, disposition, and faculties, so uniformly hereditary in each species, and so completely adequate to their peculiar wants and conveniences, as to overhelm us with astonishment at the power, wisdom, and beneficence of the Creator.

"In proportion as we become acquainted with these particulars, our visits to and residence in the country become more and more agreeable. Formerly, on such occasions, we found ourselves in solitude, or, with respect to the feathered tribes, as it were, in a strange country, where the manners, language, and faces of all were either totally overlooked or utterly unknown to us; now, we find ourselves among interesting and well-known neighbours and acquaintances, and in the notes of every songster recognize with satisfaction the voice of an old friend and companion. A study thus tending to multiply our enjoyments at so cheap a rate, and to lead us, by such pleasing gradations, to the contemplation of the Great First Cause, the Father and Preserver of all, can neither be idle nor useless, but is worthy of rational beings, and, doubtless, agreeable to the Deity."

What more could be said of this noble science, after the stirring appeal of Alexander Wilson?

J. M. LeMOINE,

Quebec, 11th January, 1871. *Curator.*

DONATIONS TO THE MUSEUM.

Small Case of South-American Insects,—By Dr. W. R. Patton.

$85.65 in Confederate State Bills,—By the Hon. J. Fraser.

Two Loon Eggs,—By W. D. Campbell.

Greater and Smaller Albatross, 3; and two Petrels,—By John William Bligh, M.D., C.M., M.R.C.S.E.

A Button with the Initials I. R. A.,—By Dr. Brigham.

A Postage Card,—By Commander E. D. Ashe.

An Old Coin of 1672,—By G. Staton.

One Pair Moose Deer-Horns,—By H. McHugh.

REPORT OF THE LIBRARIAN.

When I submitted my last Report, as Librarian of the *Literary and Historical Society of Quebec*, I felt gratified in being enabled to mention the progress of the Library during the preceding year.

During the last twelve months, 120 volumes have been added: 82 were purchased by the Council; the remaining 38 were gifts from Members and Corresponding Members. Amongst the purchases, I may mention a master-piece of Canadian typography, the works of Champlain; two splendid volumes on Chemistry, by Dr. Sheridan Muspratt; the Treatise of Somerville on Molecular and Microscopic Science; the Report of the Canadian Eclipse Party in 1869; the *Life of the Duke of Kent;* the sequel of the useful publications of the Smithsonian Institute; and the precious gift of a Letter of Christopher Columbus, of which only 24 copies were printed, generously presented to the Society by its Editor, Mr. Edwin Tross, Paris. Side by side with this renowned French *bibliopolist* ought to be noticed, as benefactors of the Library, the Governments of Canada and Nova Scotia; the Commonwealth of Massachusetts; the Historical Society of Connecticut; the City Hospital of Boston; the Mercantile Library of New York; the Smithsonian Institute; Messrs. Roderick McLeod, L. Bertolotto, Dr. W. J. Anderson, John Harris, Charles Cowley, Dr. H. H. Miles, of Quebec; Hon. John Fraser, of Ste. Marie; General de Peyster, of New York. Mr. M. Stevenson also presented the Library with a very scarce book, enhanced in value by splendid copper-plate engravings. This rare work was published at Leyden in 1665, under the French title: "L'Ambassade de la Compagnie Orientale des Provinces Unis vers l'Empereur de la Chine."

During the past year, the number of books circulated amongst the members has been 1,938 volumes, being 439 more than the circulation of the preceding year.

Eleven new European and American Reviews and Magazines have been added to the thirty-three already on the table.

When the Catalogue, now being printed, shall be distributed, the Library will be complete ; and its 10,000 volumes, circulated amongst the public, and more appreciated by our fellow-citizens, will make it one of the most attractive and useful Libraries of this city, thanks to the magnificent collection of literary, historical, and scientific works spread along its shelves.

The whole respectfully submitted.

FAUCHER DE SAINT MAURICE,

Librarian.

Quebec, 11th January, 1871.

DONATIONS TO THE LIBRARY.

Books and Documents in French, 6 volumes,—By A. H. E. Faucher de St. Maurice.

Nova Scotia Archives, 3 volumes,—By Thomas B. Akins, Commissioner of Records, Nova Scotia.

Canada,—Catalogue of the Library of Parliament, 1857,—By Dr. W. J. Anderson.

Géologique du Canada, 1 volume,—By R. McLeod.

Scientific American, 1 volume,—By L. Bertolotto.

Phrenological Journal, 1 volume,—By L. Bertolotto.

Statutes of Canada, 1 volume,—By Government of Canada.

History of General Kearney, 1 volume,—By Gen. J. W. De Peyster.

C. E. Anderson's Gazetteer of Ontario, 1 volume,—By Dr. W. J. Anderson.

Report on the Invertebrata of Massachusetts, 1 vol.,—By the Commonwealth of Massachusetts.

Contributions to Knowledge, volume 16 ; Miscellaneous Collections, volumes 8, 9,—By the Smithsonian Institute.

Calendar of New York Historical Manuscripts, 2 volumes; Fifty-second Annual Report of the Trustees of the New York State Library, 1 volume,—By New York State Library.

Sessional Papers, volumes 3, 4, 1869,—By Dominion Government.

Historic and Antique Scenes of Brooklyn and its Vicinity, 1 volume,—By T. F. Field.

Sessional Papers, vols. 2, 5, 6, 1869, 1 vol.,—By Dominion Government.

Canada Eclipse Party, 1869, 1 volume,—By Captain E. D. Ashe.

Journals of the Senate, Canada, volume 3, 1870; Journals of the House of Commons, volume 3, 1870,—By Dominion Government.

Field's History of the Royal Society, 2 volumes,—By Dr. H. H. Miles.

Tales of the Sea, 1 volume,—By John Fraser.

Sessional Papers, 1 to 3, volume 3, No. 1, 1870; Sessional Papers, 6, 7, 8, 11, 12, 31, 1870, 3 volumes,—By Dominion Government.

Collections of the Connecticut Historical Society, 1 vol.,—By Connecticut Historical Society.

Medical and Surgical Reports, 1 volume,—By Boston City Hospital.

Literary and Historical Society of Quebec.

Dr. Abstract of the Treasurer's Account for 1870. Cr.

Dr.		
1870.		
Jany. 12.—To Balance from last year:		
Historical Document Fund	$130 42	
Life Members' Fund	54 65	
General Fund	447 81	
		$632 88
To Received Government Grant		750 00
To " Interest on Deposits		29 31
To " from Subscribers		726 00
		$2138 19

Cr.		
1870.		
By Paid for Books, Periodicals, &c	$559 43	
By " " Rent, Taxes, Insurance, &c	252 75	
By " " Salaries	213 38	
By " " Fuel, Gas, &c	102 96	
By " " Furniture and Museum	218 69	
By " " Sundry Expenses	126 19	
		$1473 40
By Balance on hand, as follows:		
Historical Document Fund	$130 42	
Life Members' Fund	54 65	
General Fund	479 72	
		664 79
		$2138 19

Quebec, January 7th, 1871. (Signed,) T. H. GRANT, Treasurer.

Literary & Historical Society of Quebec.

LIST OF MEMBERS, 1871.

Life-Member :—THOMAS GLOVER, *Esquire.*

Associate Members.

Ashe, E. D., Comdr., F.R.S.
Anderson, W. J., M.R.C.S.
Ahern, W.
Andrews, F. H.

Bowen, N. H.
Bouchette, Jos.
Baillairgé, Chas.
Burroughs, J. H. R.
Bertolotto, L.
Baillairgé, L. J.
Baby, M. W.
Boswell, J. K.
Bossé, J. G.
Budden, J. S.
Belleau, J. F.
Bennett, Benson.
Blanchet, H.
Burstall, E.
Boswell, W., M.D.
Brown, W. P.
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Bowles, J.
Blaiklock, F. W.
Bruce, R.
Blanchette, Hon. J. G., M.P.
Benson, W. P.
Bodkin, A. A.

Chauveau, Hon. P. J. O., M.P.
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Cook, J. W.
Colston, J. G., B.A., L.L.M.
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Caron, A. P.
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Doucet, P. A.
Dawson, S. J.
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Fraser, Hon. J.
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Gilmour, Jno.
Gregory, J. U.
Gibb, Jas.
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Goodwin, J. W.
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Gibsone, J. F.

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Holt, C. G., Q.C.
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Hossack, J.
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Hart, Geo.
Hunt, W.
Hamilton, R.
Hamilton, Rev. Chas.
Home, W.
Hunter, T.
Hemming, H.
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Hossack, J. F.

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Joseph, A.

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Lesage, S.
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Montizambert, C. N.
Marsden, W., M.A., M.D.
Moodie, W.
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Pope, E.
Parkin, E. B.
Plees, Rev. R. G.
Poston, C.
Powis, Rev. H. D.

Quebec, J. W., Lord Bishop.

Renault, A.
Richardson, O. L., Jr.
Renaud, J. B.
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Robertson, A.
Ross, J. G.
Ross, N. N., Jr.
Richardson, W. C.
Ross, J.

Scott, H. S.
Shaw, R.
Stevenson, M.
Sheppard, W. G.
Sewell, J. A., M.D., Jr.
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Simons, W.
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Thomson, J. C.
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Woolryche, Rev. A. J.
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Young, J. R.

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B. C. A. Gugy.
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Literary and Historical Society of Quebec.

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His Excellency the Hon. Sir NARCISSE F. BELLEAU, Lieut.-Governor.

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N. GOULD,
HENRY GOADBY, M.D.
T. STERRY HUNT, F.R.S.
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CHARLES LANMAN,
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T. D. HARINGTON,
ARTHUR HARVEY,
E. T. FLETCHER,
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Campbell, Major, St. Hilaire.
Chauveau, Hon. P. J. O., Quebec.
Cherriman, Professor, Toronto University.
Chapleau, J. A., M.P.P., Montreal.
Cortambert, A.
De Sola, Rev. A., Montreal.
Donaldson, Lachlan, St. John, N.B.
D'Urban, W. S. M.
De Peyster, General J. Watts, New York.
Dansereau, A.
Fortin, P., M.P.
Fitisqui, Le Comte.
Gibb, Sir D., Bart.
Graham, Lt.-Col., U.S.A., Chicago.
Gérin, E.
Grazillie, L'Abbé.
Henderson, W., Frampton.
Hamilton, P. S., Halifax.
Kingston, G. T., Professor, Upper Canada College, Toronto.
Latour, Huguet, Montreal.
Lefebvre de Bellefeuille, E., Montreal.
Marchand, F. G.
Noble, Captain, R.A., F.R.S., Woolwich.
Provancher, N., M.P.P., Montreal.
Russell, J. P., M.D.E., Toronto.
Roche, A. R., Toronto.
Roget, Peter Mark, London.
Sechelles, C., Desmazieres de St. Malo, France.
Sewell, Rev. Henry.
Sinding, Paul C., Professor, Copenhagen.
Shea, J. G.
Sulte, B.
Taylor, F.
Tross, E.
Tilley, H. L. G.

Literary and Historical Society of Quebec.

OFFICERS FOR THE YEAR 1871-72.

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WM. MARSDEN, M.A., M.D.	*Vice-Presidents.*
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J. F. BELLEAU	*Curator of the Museum.*
G. THOMPSON	*Curator of Apparatus.*
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Rev. H. D. POWIS	
HENRY FRY	
JAMES STEVENSON	

N. B.—The Manuscripts and Transactions of the Society may be obtained on application to the Librarian at the Library.

DEED OF LEASE.

MORRIN COLLEGE

TO

THE LITERARY AND HISTORICAL SOCIETY OF QUEBEC.

On the fifth day of March, in the year of our Lord one thousand eight hundred and sixty-eight, before us, the undersigned Notaries Public, duly commissioned and sworn for that part of Canada heretofore constituting the Province of Lower Canada, residing at the City of Quebec, personally came and appeared "Morrin College," a Body Politic and Corporate, established at the said City of Quebec under the provisions of the Provincial Statute 24th Victoria, Chapter 109, represented herein by the Reverend John Cook, D.D., of the said City of Quebec, first Principal and Chairman of the Governors of said College, who did declare to have leased and demised, and by these presents do lease and demise, for the space and term of ten years, to be computed from the first day of May now next ensuing, and fully to be complete and ended on the thirtieth day of April, which will be in the year of our Lord one thousand eight hundred and seventy-eight, unto "The Literary and Historical Society of Quebec," a Body Politic and Corporate, established at Quebec aforesaid under the provisions of the 10th and 11th George IV., Chapter 47, represented herein by William James Anderson, Esquire, M.D., of the said City of Quebec, one of the Vice-Presidents of the said Society, hereunto duly authorized, the said William James Anderson hereunto present and accepting hereof, that is to say:

Three rooms on the north side of the second flat of the building heretofore known as the Old Jail, and now being converted into a College building, said rooms to be finished according to the plans prepared by Mr. Peachy, Architect, and approved of by the said Society; together with the use of a suitable water-closet in the building, to be provided and kept in order and repair by the College, and also accommodation for housing fuel: said rooms to be ready for occupation on the first of May next, and to be used and enjoyed by the Society during this Lease as a Library, Museum, and Reading-Room, respectively, with free access thereto by the Members of the Society at all reasonable times; and with all which the said Lessees are content and satisfied.

And during all which period the said Lessors hereby promise and engage to cause the said Lessees to enjoy the said premises peaceably and quietly; to maintain the same in the landlord's repairs, and keep the same wind and water tight, according to law. And the said Lessees do hereby bind and oblige themselves to use and enjoy the said premises *en bon père de famille*, and maintain the same in all small and internal repairs; also, that they will observe all rules, regulations of Police, and all bye-laws of the Corporation of this City, which may concern the said premises hereby leased, in so far as the same may be incumbent upon Tenants; that they will pay, over and above the rent hereinafter stipulated, the water-rates which may be charged upon the said premises, proportionately to their rent; that they will keep the said premises furnished with moveables and effects sufficient to guarantee the payment of the rent hereinafter stipulated; that they will not sublet the same, in whole or in part, without the consent of the Lessors first had and obtained in writing; and that at the end and expiration of the present lease, and without any notice to that effect, they will surrender and deliver up the said premises in as good order and condition as they may receive the same, reasonable allowance being made for wear and tear.

The present Lease is thus made for and in consideration of the sum of one hundred and twenty dollars, current money of this Province, for each and every year of its duration, and which the said Lessees do hereby promise to pay unto the said Lessors, or bearer or bearers hereof, in and by equal consecutive quarterly payments, of the sum of thirty dollars each, the first of which shall be made on the first day of August next.

Moreover, it is expressly covenanted and agreed between the said parties hereto as follows, to wit:—1°. That should the said Society receive at any time during this Lease a Legislative grant of not less than four hundred dollars *per annum*, they shall be bound to pay in like manner to Morrin College an annual rental of two hundred dollars *per annum*, in lieu of the rent above stipulated, during the continuance of such Legislative grant; 2°. That either party will have the right of cancelling this Lease at the expiration of the first five years, on giving three months' notice in writing to the other party prior to the expiration of the said term of five years; and 3°. That during the term of this Lease, the Governors, Professors and Students of Morrin College will be entitled to have and are hereby granted the free use of the Library of the Literary and Historical Society, and also free access to its Museum in like manner as the Associate Members of the Society are entitled to use and enjoy the same.

And for the due execution of the present Lease, the said parties do hereby elect their domiciles, to wit: the said Lessors and the said Lessees at the premises above leased, at which places, &c., promising, &c., obliging, &c., renouncing, &c.

Thus done and passed at the said City of Quebec, in the Office of Noel Hill Bowen, one of us the said Notaries, on the day and year first above written, under the number three thousand seven hundred and eighty-seven. In Faith and Testimony whereof, the said parties hereto, respectively, acting and represented as aforesaid, have to these presents, first duly read, set and subscribed their names and signatures with us, the said Notaries, also hereunto subscribing; and the Seals of the said Corporate Institutions have been hereunto likewise affixed.

(Signed,) JOHN COOK,
[L.S.] Chairman.

WM. JAS. ANDERSON,
Vice-President,
[L.S.] Literary and Historical Society.

NOEL H. BOWEN,
I. NOLET, N.P. Notary Public.

A true copy of the original remaining of record in my Office. (One marginal note approved good, and twenty-two words erased are null.)

NOEL H. BOWEN, No. Pub.

Literary and Historical Society of Quebec.

THE WOODS OF CANADA.

"We are happy to learn that the Literary and Historical Society has, at a recent meeting of the Board, voted a sum of money to begin forthwith the collection of Woods in contemplation."—(*Quebec Morning Chronicle, January 20th*, 1871.)

(*To the Editor of the Morning Chronicle.*)

Sir,—I was pleased to see noticed in our city press the efforts of the Directors of the Literary and Historical Society to keep track with the rest of the scientific world in every department of study which is within its province. You may rest assured it is the intention of every member that our institution shall be second to none in Canada, as well by its Library as by the collection of birds, animals, fishes, eggs, &c., in its Museum. The large amount appropriated to this purpose, recently, is a sufficient earnest of such an intention. In the name of the Society, I cheerfully thank its numerous benefactors for rare books, handsome specimens of Natural History, and some natural curiosities.

The newest books of travel will be constantly ordered from Europe or the States. Canadian authors will also bear in mind that there is a portion of the Library exclusively devoted to the works of Canadians, written in the English or in the French language. The Society is particularly desirous to complete this collection, either by donations or by purchases.

Steps will be shortly taken to enlarge the mineralogical department; and I, among many others, am most anxious to see in our Museum, as suggested, an elaborate collection of Canadian woods.

In order to invite new members to join, it is now contemplated to bring before the Board a plan to open on some nights the rooms for those amongst our fellow-citizens who cannot call for books during the day. Our Library is now, after the Laval University, the most select, the most numerous, the most valuable, in Quebec: there are upwards of thirty English, French, American, and Canadian Reviews and Magazines on the table. The annual subscription, which formerly was $8, has been of later years reduced to $4; so that, if our fellow-citizens, of all origins, will continue to this ancient and flourishing Institution the cordial support extended to it for some time past, there is no reason why the list of paying members at the end of the year should not reach the figure of 300.

It is expected of every member that he will point out to his friends the advantages presented by our Library of 10,000 volumes, &c., for debating societies and private individuals, in order, by enlisting them as members, to secure their co-operation.

J. M. LeMOINE,
Quebec, January 21st, 1871. *President.*

LITERARY AND HISTORICAL SOCIETY OF QUEBEC.

Transactions and Manuscripts of the Society.

The following "TRANSACTIONS" and MANUSCRIPTS, published by the Society, may be had on application at the Library:

TRANSACTIONS,

For the years 1832; 1843; 1854; 1855; 1862; 1863; 1863-4; 1864-5; 1865-6; 1866-7; 1867-9; 1869-70; 1870-71.

Manuscripts of the Early History of Canada.

"Campaign of Louisbourg, 1750-58."—By Chevalier Johnstone.

"Journal of the Expedition up the River St. Lawrence, 1759."—From the "New York Mercury," December, 1759.

"Colonel Malcolm Fraser's Journal of the Siege, 1759."

"Journal du Siège de Québec en 1759."—M. Jean Claude Panet.

"Dialogues of the Dead: Montcalm and Wolfe."—Chevalier Johnstone.

"Campaign of 1760 in Canada."—Chevalier Johnstone.

"Invasion of Canada, 1775."—Lieutenant-Colonel Caldwell.

"Mémoire du Sieur de Ramezay, Commandant à Québec, 1759."

"Histoire du Montréal."

"Voyage D'Iberville."

"L'Armée Américaine, lors de l'Invasion du Canada en 1775-6."—Par J. B. Badeaux.

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